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THE
NATURALIST:
A
MONTHLY JOURNAL OF
NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY
THOS. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.(Scot.).
CURATOR OF THE MUNICIPAL MUSEUMS, HULL.

HON. MEMBER OF THE YORKSHIRE NATURALISTS' UNION; THE SPALDING GENTLEMEN'S
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WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S.

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PROF. PERCY F. KENDALL, M.Sc., F.G.S.

JOHN W. TAYLOR, M.Sc.

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Contents :—

	PAGE
Notes and Comments :— Petroleum ; Linnean Species of Mollusca ; Yorkshire Geologists ; Science and Nationality ; Yorkshire Natural Science ; Yorkshire Naturalists ; Selous, The Sportsman	1-4
The Common Banded Snail: a Study in Variation (illustr.)— <i>A. E. Trueman, D.Sc., F.G.S.</i>	5-9
Notes on the Flora and Fauna of North-east Derbyshire — <i>Eric Drabble, D.Sc., F.L.S. and Hilda Drabble</i>	10-12
Notes on the Entomology of the Bubwith District — <i>W. J. Fordham, M.R.C.S., L.R.C.P., F.E.S.</i>	13-16
Common Wild Birds of the Scarborough District — <i>W. Gyngell</i>	17-20
The Spiders of Yorkshire — <i>Wm. Falconer</i>	21-25
Yorkshire Naturalists at Leeds — <i>W.E.L.W.</i>	26-28
Notes on Arctic-Alpine Mollusca (illustrated)— <i>Hans Schlesch</i>	29-32
Yorkshire Naturalists' Union's Report for 1918	33-43
In Memoriam: Richard Barnes (illustrated)— <i>C.A.C.</i>	44-45
Field Notes :— Scarcity of Wheatear ; Yorkshire Herons ; Lancashire and Cheshire Entomology ; <i>Goodyera repens</i> near Carlisle	9, 32, 46
Correspondence: The Causes of Varieties in Butterflies	47-48
Proceedings of Provincial Scientific Societies	12
Northern News	25, 48
News from the Magazines	45, 48
Illustrations	6, 29, 31, 44

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THE NATURALIST

FOR 1919.

NOTES AND COMMENTS.

PETROLEUM.

We take the following from *Nature* :—‘ The inauguration of the first boring for petroleum in this country, which took place at Hardstoft, near Chesterfield, on October 15th, was an event of more than economic interest by reason of the confirmation it may afford of the speculations of competent oilfield geologists of the existence of oil in this country. Forty American drillers are engaged on the first boring, but provision of the necessary plant for drilling ten wells has been made ; seven of these drillings are to be made in the vicinity of Chesterfield. Each of the wells will be fully equipped for a maximum depth of 4,000 feet, and the principal occurrence of oil is expected to lie between 2,000 feet and this maximum. Lord Cowdray, to whom the nation is so much indebted for the assistance he has rendered in this pioneer work, claimed that although in America such experimental drilling would be known as ‘ wild-catting,’ yet it was more than justified by to-day’s knowledge, but was not a case for exaggerated hopes. Such a word of caution was very necessary, for it was so customary to think of oil-wells as yielding prodigious quantities that the low average of some five tons a day per well throughout the world is not realised. Last year the importation of oil into this country was valued at more than £36,000,000. Even if all the ten wells yielded the above average, the contribution to our national requirements would be very little, and the present enterprise must be regarded more as exploratory than as likely to furnish any adequate proportion of our requirements.’ Personally, in view of the comparatively small areas in which deposits of Oil Shale occur in the British Islands, we are not very hopeful of a terrific success with regard to this supply of Petroleum.

LINNEAN SPECIES OF MOLLUSCA.

At a recent meeting of the Linnean Society a paper was read ‘ On the Linnean species of Non-Marine Mollusca that are represented in the British Fauna, with notes on the specimens of these and other British forms in the Linnean collection,’ by A. S. Kennard, F.G.S., and B. B. Woodward, F.L.S. In this the authors state ‘ Thanks to the active researches of Mr. C. D. Sherborn, A.L.S., for the “ Index Animalium,” prosecuted now for some thirty years, of Mr. Iredale, Mr. Reynell, and others, our knowledge of the work of the earlier writers has been so greatly increased, especially of late, that there now seems some chance of approximate finality being attainable in the matter of nomenclature on the basis of priority—at

least in the case of the British post-Pliocene Non-Marine Mollusca with which we are particularly concerned. Accordingly we are attempting a more thorough revision of their synonymy than was essayed by us in 1903 (*Journ. of Conch.*, Vol. X., pp. 352-367) and 1914 ("List of the British Non-Marine Mollusca," 8vo, pp. 12). Naturally one of the first steps in this undertaking has been to re-investigate the Linnean types, which have not been scrutinized since Hanley wrote his account of the whole collection of shells ("Ipsa Linnæi Conchylia," 1855), save for the uncompleted investigation by Mr. J. W. Taylor and Mr. W. D. Roebuck in May, 1914, when they "examined and isolated all the British land and fresh-water shells" (Taylor, "Monograph," iii., p. 17).

YORKSHIRE GEOLOGISTS.

We are glad to see that the Yorkshire Geological Society continues to issue its excellent publication, part 4 of Vol. XIX., with twelve plates and numerous tables and illustrations in the text, having recently appeared. The Society also keeps the Geology of the county it represents well to the fore. The present part contains 'Alluvial Deposits at Woodlesford and Rothwell Haigh, near Leeds,' by A. Gilligan; 'Correlation and Facies of the Upper and Middle Oolites in England and North-west France,' by M. Odling; (with appendices: 'On an Artesian Well at Oswaldkirk,' by Percy Fry Kendall, and 'Note on the Stratigraphy of Roulston Scar,' by M. Odling); 'The Lower Permian at Ashfield Brick and Tile Works, Conisborough,' by A. Gilligan; (with appendix: 'Chemical Composition of the Beds,' by M. Odling); 'Martin Simpson and his Geological Memoirs,' and a 'Bibliography of Yorkshire Geology, 1916-17,' both by T. Sheppard. In addition there are 'In Memoriam' notices:—'Henry Culpin,' by W. Gibson; 'William Cash,' by P. F. Kendall; 'Benjamin Holgate,' by E. Hawkesworth; 'William Simpson,' by F. W. Branson; 'John Wesley Judd,' by G. A. J. Cole.

SCIENCE AND NATIONALITY.

Referring to our remarks in *The Naturalist* for November, the 'inaugural' meeting of the Yorkshire Natural Science Association was held at the University, Leeds, in due course, and Prof. Bateson gave his 'Presidential Address' on 'Science and Nationality.' In this Prof. Bateson stated:—As far as the war was concerned, the end of the first act had come, but the tragedy might soon begin again. Priests and law-givers had failed to secure peace in the past. Could it be that scientists would help where the others had failed? As scientists they knew that the life of one creature was the death of another, and knowing that every living thing held its place by power, and power alone, it was not for them to cherish dreams of universal peace. In their hearts they know

that never would true peace be found. Not only could peace, absolute and whole, never be attained, but it could never be approached. Among mankind race exterminated race by fire and sword or by competition in countless disguises. Though war might cease, struggle and competition went on. We were told that each nation would be free to develop, as President Wilson said, 'unhindered, unthreatened, unafraid,' but to the biologist the substance behind those words was an illusion. He was no pacifist; he believed the duty of self-defence was one which no Government could decline; but he was not sanguine that it was within our power to avert a similar catastrophe in future. On the other hand, he thought that the pronouncement that from the principles of biology it could be inferred that wars would recur displayed a certain confusion of thought. Recognising that the struggle for existence must go on, and that it was not in the power of individuals to contract themselves out of the struggle, he still saw nothing in what we knew of biology which justified the assertion that the struggle must periodically take the shape of war. He did not think that war was an essential phenomenon in the struggle for existence.

YORKSHIRE NATURAL SCIENCE.

At the meeting, the Chairman, Dr. H. Wager, stated:—If any apology were needed for the inauguration of yet another society it would be found in the fact that in the near future science would have to play an exceedingly important part in the work of reconstruction. Something on a broader basis than that of the numerous existing specialised societies was necessary. There were plenty of Yorkshire scientific societies that specialised, but there was none that appealed to scientific men and women on broad lines, and the promoters of that meeting felt that it was detrimental to the development of the intellectual possibilities of the race that there should be a continued specialisation, which had become narrower and narrower largely owing to the exigencies of the various branches of learning. It was necessary to 'get to the hilltop, look around and see how things are trending.' Specialised training rather tended to destroy the soul; certainly it limited the outlook. The talk at present was very largely of science as utilitarian. It was believed by some people to have been the cause of the war. That was not so, though the cause of the war might have been the misapplication of science, brought about by the misapplication of scientific facts and inferences through the generalisations of imperfectly trained philosophers. It was at first suggested that the society should be one for science teachers, but it was felt that even such a society as that would be in a specialised groove. What was wanted was a membership of people who had what he might term a good education in science.

YORKSHIRE NATURALISTS.

All this might easily give the 'man in the street' the impression that the Yorkshire Natural Science Association and the Yorkshire Naturalists' Union were covering much of the same ground. Surely, if anybody does object to 'specialisation'—and the 'narrow outlook,' it is a Yorkshire naturalist, who, of all men, gets to the hilltop, looks around, and sees how things are trending.' However, we are pleased to learn that the objects of the Society as set forth on its official circular, and as might be assumed from the newspaper report, are not really as we might assume, and that the society does not really compete with the Yorkshire Naturalists' Union in any way. This we have on the authority of Prof. Garstang, who told us at our Annual Meeting at Leeds that he would certainly not have had anything to do with the new Society if it had any likelihood of interfering with the Union in any way, and he felt he could say the same for Dr. Wager. Anyway, the new Society is optimistic, and has decided to hold its next 'Annual Meeting' at Bradford, so we must 'wait and see.'

SELOUS.*

The many admirers of Selous will be delighted with Mr. Millais' charming account of the life and work of his old friend. From first page to last the story never loses hold; from the daring achievements of 'John Leroux' at Rugby School, his encounters with gamekeepers, and collecting expeditions to his later days, when big-game hunting of a kind which has made the name of Selous world-famous; all are similarly fascinating. Of Selous' achievements in Africa, his books have already made many of our readers familiar, but Mr. Millais is able to give many details which are not in Selous' works, and recites many stories which Selous himself has not published. Mr. Millais' sketches add value to the book. As a pioneer, Selous' work was of inestimable value to his country.

THE SPORTSMAN.

Then, as sharing the spirit of this 'sportsman' in every sense of that word, he volunteered for service in the Great War, and was shot, at 65 years of age, while leading his men against great odds in East Africa. 'Thus died Frederick Selous of the Great Heart, a splendid Englishman, who in spite of age and love of life, gave up all pleasant things to follow the iron path of duty. To him his country's needs were ever before his private interests. Like the voyageurs of old he was ever looking for some far-off country where his restless soul could sleep in peace. Let us hope that he found his Valhalla on that day.'

* Life of Frederick Courtenay Selous, D.S.O., by J. F. Millais. Longmans Green & Co. 387 pp. 21/- net.

THE COMMON BANDED SNAIL. A STUDY IN VARIATION.

A. E. TRUEMAN, D.Sc., F.G.S.

EVERY field naturalist knows the wonderful variety of colour and marking exhibited by the common banded snail (*Helix nemoralis* Linn.). It is therefore by no means surprising that many workers have made extensive collections of these shells, and numerous attempts have been made to show how all the variations are dependent on the nature of the environment. Yet very few writers give any of the simple facts of growth and modification which are needed before any understanding of this problem is possible, and it is as a short introduction to this means of study that the following has been written.

Almost every type of shell form, colour and marking has received a special name, and ranks as a 'variety' in systematic lists. Thus, one of the common yellow shells would be var. *libellula*; if banded, var. *fasciata*; if with pink mouth, var. *roseolabiata*; if very thin, var. *tenuis*, and so on. A most comprehensive account of these 'varieties' is given in Mr. J. W. Taylor's excellent Monograph.* While collectors are content to record these varieties from as many counties and vice-counties as possible, without any details of their occurrence, their abundance, and their persistence, little progress in this study is to be expected.

One of the most laborious studies of variation in *H. nemoralis* was that made by Mr. W. Gyngell,† who collected some thousands of shells in various localities, both inland and coastal. The averages given by him show the relative abundance of different types in the areas where he collected, but otherwise his results are too general to be of any value.

It has been usual for some years to ascribe all variations to environmental influences, and to assume that they had value in the struggle for existence. Thus Mr. Taylor pointed out ‡ that among the causes of variation in *H. nemoralis* which have been suggested, are the nature and colour of the soil, the character of the food plants, and the position of the habitat. Leydig§ arrived at similar conclusions from his study of the shells of Germany, but his evidence cannot be regarded as

* J. W. Taylor, 'Monograph of the Land and Freshwater Mollusca of the British Isles,' Vol. III., 1914, p. 294 *et seq.*

† W. Gyngell, *Helix nemoralis* and *H. hortensis*, etc., *Journal of Conchology*, 1911, p. 241.

‡ J. W. Taylor, *Op. cit.*, p. 288.

§ F. Leydig, 'Ueber Verbreitung der Thiere in Rhonegebirge, Verhandl. d. natur. vereins d. preuss. Rheinlande u. Westfalens,' 1881, p. 156. See also Eimer, 'Organic Evolution,' (Trans. J. T. Cunningham), 1890, p. 137.

convincing. It is quite certain, as Vernon* pointed out, that very violent changes of environment produce notable change in the shells; it will also be shown later that there are some modifications in *H. nemoralis* which are traceable to weather conditions, and to the amount of lime in the soil, but in the words of Prof. Bateson,† the assertion that local distinctions are caused by differences of climate, food, or soil, is merely a result of belief in adaptation to an environment, and not a result of observation. For example, if yellow shells are particularly adapted to a certain locality, why do we find red ones on the same plants? And if unbanded shells are adapted to life on a given hedge bank, why are all the shells banded on an (apparently) similar hedge bank not ten yards away? We can only conclude that the advantage possessed by the more suitable of the forms, if advantage there be, is very small, and that selection is not so stringent as to lead to the extinction of the other.‡

DISTRIBUTION OF VARIETIES.—When commencing this work

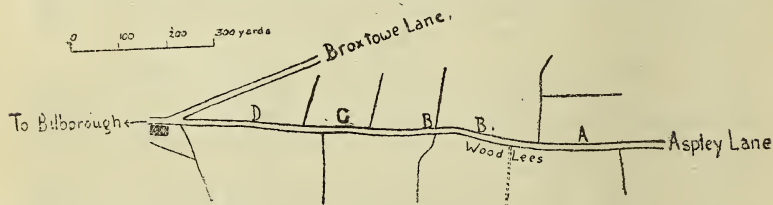


Fig. 1.—Sketch map showing the distribution of *Helix nemoralis* between Nottingham and Bilborough.

- | | | | |
|----|-----------|-----------------------|----------------------------------|
| A. | Area with | <i>H. nemoralis</i> | (band formula 12345). |
| B. | " " | <i>H. hortensis</i> . | |
| C. | " " | <i>H. nemoralis</i> | (band formula 00300). |
| D. | " " | " | (band formulae 00000 and 12345). |

large numbers of shells were collected in various localities around Nottingham on the different geological formations, in the expectation that each would show some peculiarities of shell type. Except, however, for certain differences in the average thickness of the shells, to be noted later, no such distribution of varieties was found, although it soon became apparent that certain small areas contained only shells with particular types of banding. In order to determine the relations of these types, their distribution was mapped in several areas, every shell collected being recorded on a large scale map (24 in. to 1 mile). One of these maps, showing the lane between Nottingham and Bilborough, is reproduced here (fig. 1).§ In

* H. M. Vernon, 'Variation in Plants and Animals,' *Intern. Sci. Ser.*, 1903, p. 231.

† W. Bateson, 'Problems of Genetics,' Yale Univ. Press, 1913, Chap. vi.

‡ W. Bateson. *Op. cit.*, p. 17.

§ From Ordnance Survey Map (6 ins. to 1 mile), Notts., XXXVII., S.E.

the area A, only five-banded shells were found; at B, no examples of *H. nemoralis* were taken, but *H. hortensis* was abundant, although absent elsewhere in the neighbourhood. C was an area with one-banded *H. nemoralis* only, while further west, at D, unbanded and five-banded shells occurred together. Various other types are similarly restricted to small positions of other areas. Mr. C. S. Carter likewise found considerable differences in the shells collected on opposite sides of the Pullover, at Mablethorpe, Lincolnshire,* while Rev. E. A. Woodruffe-Peacock noted a similar fact at Brigg.†

Most of my observations were made in Nottinghamshire, but I have also collected *H. nemoralis* extensively in most other midland counties; my records including some twenty thousand shells, with details of their habitats. Several friends have greatly assisted me by gifts of specimens and by allowing me to examine their collections; among these I may mention Messrs. W. E. Howarth, J. Laws, and W. D. Varney, B.Sc. I have also examined a number of specimens from Ireland in the Natural History Museum, Nottingham, by permission of Prof. J. W. Carr, and some collected in northern France by Lieut. R. J. Welch.

DETAILED STUDY OF VARIATIONS.—*Colour*.—While many different colour varieties of *H. nemoralis* have been described and have received separate names, they may generally be referred to two groups, namely, of red and yellow shells, which are discontinuous. It is possible that some chemical factor determines these colours.‡ Pink shells occasionally become yellow on the outer whorl (var. *rubello-libellula*) while, on the contrary, some yellow shells become pink (var. *libello-rubella*).§ It also frequently happens that immediately in front of the mouth of a red or orange shell is a yellow zone; in some red shells which show distinct resting stages during growth a similar yellow zone occurs at each such stage.

In areas where shells with only one type of banding occur (as at C. fig. 1) both red and yellow shells may be found. Shell coloration is thus of a comparatively inconstant nature, and is less deserving of varietal rank than types of banding.

SPIRE.—Rare examples of *H. nemoralis*, perhaps not more than one in a thousand, have a spire noticeably elevated or depressed, due to a slight change in the spiral angle. An increase in the spiral angle (possibly a tendency towards uncoiling) occurs in the last whorl of all normal examples of *H. nemoralis*.

* C. S. Carter, 'Local Distribution of Colour and Band Formulae,' *Trans. Lincs. Nat. Union*, 1908, p. 304.

† E. A. Woodruffe-Peacock, 'Thrush Stones,' *The Naturalist*, 1909, p. 178, etc.

‡ W. Bateson, 'Materials for the Study of Variation,' 1894, p. 72.

§ J. W. Taylor. *Op. cit.*, p. 304.

Reversed or sinistral shells are still less common ; I have not found a single specimen in the course of this work. Yet in some localities (as at Bundoran, Ireland) sinistral examples of *H. nemoralis* are common.

THICKNESS OF SHELL.—It is usual to find thick heavy examples of *H. nemoralis* (var. *ponderosa*) on limestone soils, yet all the shells found in such localities are by no means thick. Thus on the Magnesian Limestone of Aspley Lane, Nottingham, while the average shell weighs about 11 grains, shells weighing 20 grains are not uncommon. Yet very thin shells (var. *tenuis*) consisting of conchiolin with scarcely any calcareous material and weighing only 4 grains, may be found feeding on the same plant. This may be due to differences in the rate of growth or to different activity of the shell-secreting glands.

On soils deficient in lime, as the Bunter or Keuper of the Midlands, the shells are generally thin. For example, fully seventy per cent. of the shells from Edwalton, Notts., on the Keuper Marl, may be referred to var. *tenuis*.

BANDING.—Normal examples of *H. nemoralis* are five-banded ; some are unbanded, and one, two, three and four-banded forms may all be found. G. von Martens proposed to number the five normal bands 12345, starting at the posterior part of the whorl and proceeding anteriorly. Using a cipher to denote an absent band, it is possible to use these formulae to show the ordinary types of banding.

Thus, the commonest shell has five bands, and would be represented by 12345. An unbanded shell would be 00000, while the common one-banded form, in which the band represents the middle one of a five-banded shell, would be 00300. When two bands become united the corresponding numbers are bracketed in the formula.

Various other formulae have been invented to show the relative widths of the bands ; of these, the most useful is that suggested by Rev. E. A. Woodruffe-Peacock,* which has been employed in making the records for this work, but the somewhat complicated formulae are not used here, the less satisfactory but better known formulae of Martens's being more convenient for the present purpose.

But I desire to draw attention to another and more important aspect of band variation, which takes account of the order of appearance of the bands. Mr. Taylor pointed out that in England the middle (or third) band almost always appears first† ; that is to say, the band formula of such a young shell would be 00300. In Nottinghamshire the bands appear in

* E. A. Woodruffe-Peacock, 'Thrush Stones,' *The Naturalist*, 1909, p. 178.

† J. W. Taylor. *Op. cit.*, p. 293.

the following order, 34521, that is, during ontogeny the band formulae would be

00000, 00300, 00340, 00345, 02345, 12345.

It is important to notice that, in that area, the adult shells with fewer than five bands have one or other of these formulae, or in other words, they represent stages in the evolution of the five-banded shells of the area. For example, the only three-banded adult shell commonly found is 00345, the only two-banded shell is 00340.

In other areas, the order of development is not always the same, but the adult shells generally have band formulae similar to those passed through in the development of the five-banded shell of the particular area. In some parts of Lincolnshire, the lower three bands appear in the same order as in Nottinghamshire, but the upper band often appears before the second, the order being 34512; four-banded shells found here have the formula 10345. Naturally, however, there is little difference in the order of appearance of bands in neighbouring areas.

The shells from the sandhills at Bundoran, Ireland, on the other hand, show striking differences in this respect. The third band, in the specimens I have examined, never appears first in development, the usual order being 54123; thus the stages passed through in development are

00000, 00005, 00045, 10045, 12045, 12345.

Adult shells with all these formulae, that is, representing all these stages in development, may be found. It is noteworthy that among the shells from this area the formula 00300 does not occur, although it is one of the commonest in England.

Comparable and equally striking differences in ontogeny are shown in some continental shells. For example, in some shells from Normandy the order of development of bands is 45321, while in a collection from the Somme region, the order is 35124. In other parts the order is different, and in each district the shells with less than five bands generally have formulae corresponding to some developmental stage of the five-banded shell. Greater details of the continental shells are needed before this work can be carried further.

(*To be continued.*)

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Scarcity of Wheatear.—Mr. Butterfield remarks (*The Naturalist* for 1918, p. 388) on the scarcity of the Wheatear this year and wonders whether the scarcity is local or general. Around Eastby (near Skipton) the bird was plentiful, at least six pairs nesting within half a mile of Eastby Sanatorium. Earlier in the season they were even more abundant.—W. ROWAN.

NOTES ON THE FLORA AND FAUNA OF NORTH-EAST DERBYSHIRE.

ERIC DRABBLE, D.Sc., F.L.S., AND HILDA DRABBLE.

LITTLE has been written on the Fauna and Flora of North-east Derbyshire. The area now dealt with extends from Ambergate and Matlock to Hathersage on the west, and from Tibshelf through Glapwell, Langwith and Whitwell to Woodhouse Junction on the east. It includes large tracts of Millstone Grit, Coal Measures and Permian Limestone, with smaller tracts of Carboniferous Limestone and Yoredale (or Pendleside) rocks near Matlock and Ashover, and the surface features are extremely varied, comprising moorland, woodland, pasture and arable land.

The impression seems to prevail that North-east Derbyshire is poor faunistically and floristically. This is quite erroneous, and is at least partly due to two important works, namely, the Victoria County History (1905), and the British Association Handbook (Sheffield Meeting, 1908). The sections on the fauna in the County History confine themselves, for lack of data, very largely to the southern parts of the County, while the notes in the British Association Handbook, which profess to deal with the country within a twenty-mile radius of Sheffield, were drawn up chiefly by Yorkshire naturalists who appear, with few exceptions, to have had but little knowledge of the neighbouring county. Indeed, very few memoirs dealing with the plants and animals of North-east Derbyshire have appeared.* It is our purpose in this paper to deal with our observations on the Butterflies.

The British Association Handbook gives the impression that butterflies, other than the common whites, are generally rare, and that many which in reality abound, are almost wanting. Naturally, in the immediate vicinity of manufacturing towns and coal mines the smoke-blight has a great effect, but on passing to the agricultural districts and to the moorlands the number of butterflies increases most markedly and occasionally they occur in quite extraordinary abundance.

Argynnis aglaia L. (Dark Green Fritillary).—The only record in the County History is 'formerly at Dovedale,' and it appears to be unknown in our area. In August, 1918, during a ramble of the East Derbyshire Field Club a ♀ was found on *Carduus palustris* near a marsh below the moors at Cathole, about three miles west of Chesterfield. The larvæ of

* Attention may be called to the following:—E. and H. Drabble, 'Notes on the Flora of Derbyshire' (*Journal of Botany*, 1909, pp. 199-207; 1911, pp. 313-317; 1913, pp. 5-11; 1916, pp. 133-139). E. Drabble, 'Additions to the Flora of Derbyshire' (*Journal of Derbyshire Archæol. and Nat. Hist. Society*, 1917, pp. 225-235); E. and H. Drabble, 'Notes on the Diptera of Derbyshire' (*Entomologist*, 1916, pp. 273-275; 1918, pp. 5-9).

this insect feed on the leaves of the dog-violet. Within a very short distance of this spot grow *V. riviniana* Reichb., var. *flavicornis* (Forst.), *V. canina* L., var. *flavicornis* (Sm.) and *V. palustris* L.

Grapta c-album L. (Comma).—We have not found this butterfly ourselves, but a specimen was taken near Eckington several years ago by Mr. S. Hooke, of Poolsbrook.

Vanessa urticae L. (Small Tortoiseshell).—Though generally occurring only sparingly near towns, *urticae* is extremely abundant in the country districts, especially near the moors. As many as thirty together may be seen on thistles within a radius of a few yards in August and September, and the larvæ are to be found in great numbers on the nettle. In some seasons this insect is unusually plentiful, the summers of 1914, 1917 and 1918 being noteworthy in this respect.

Vanessa polychloros L. (Large Tortoiseshell).—Occurred formerly in the Chesterfield district, but we have not seen it. Collectors tell us that they used to take it freely in gardens about thirty years ago. Our absence from Derbyshire in the early summer may account for our failure to find this insect.

Vanessa antiopa L. (Camberwell Beauty).—Seems hitherto to be unrecorded for North-east Derbyshire, but there are some five records from the south of the County. In September, 1914, we took a good specimen on *Calluna* on East Moor, where it was accompanied by crowds of *urticae*, *atalanta* and *cardui*. The food plants, willow, birch and nettle all occur there and it may well be that *antiopa* occurs more often than is generally suspected. One of us (E. D.) saw this insect about twenty years ago at Spital near Chesterfield.

Vanessa io L. (Peacock).—The County History states that *io* is 'now almost rare' in Derbyshire. It is certainly local, but locally it may be found abundantly, especially in secluded woodside pastures where *Scabiosa succisa* grows. In these situations we have seen it in such numbers that it was impossible to count the individuals. This was our experience near Barlow, in September, 1917.

V. atalanta L. (Red Admiral).—After *urticae* this is the commonest of the Vanessas. It frequents more low-lying districts than *cardui* and is found much nearer to towns than *io*. On the moors it occurs in large numbers.

Pyrameis cardui L. (Painted Lady).—Not uncommon, and odd specimens may be found in most seasons. In the last few years this insect has been plentiful in the uplands, frequenting the moors in company with *urticae* and *atalanta*.

Chrysophanus phlaeas L. (Small Copper).—Very common in dry pastures and on the moors, and appears to be on the increase. The rare variety *schmidtii* Gerh. was found at Barlow this Summer (1918), and seems to be hitherto unrecorded for the county.

Lycaena icarus Rott. (Common Blue).—Not very frequent except on the Limestones, Permian and Carboniferous, where it abounds. This is the only 'blue' that we have seen in our area.

Epinephele ianira L. (Meadow Brown).—Occurs sparingly only. This is rather surprising, as in most parts of England it is one of the commonest butterflies. Its comparative scarcity with us cannot be due to any lack of the food plants.

Coenonympha pamphilus L. (Small Heath).—Common in the uplands and on the moors.

Pararge egeria L. (Speckled Wood).—We have not seen any record of this insect for North-east Derbyshire. The County History gives 'Seal Wood and Repton Scrubs, scarce; once at Calke, H. H. C.; one seen Lathkill Dale, R. H. F.' We found this butterfly near Chesterfield in 1914.

Thecla rubi L. (Green Hairstreak).—Taken recently by Mr. S. Hooke about five miles west of Chesterfield. Apparently a new record for North-east Derbyshire.

Euchloe cardamines L. (Orange Tip).—Fairly common in the agricultural parts of our area in the spring, but apparently less so than formerly. There is no lack of its food-plants, and it may be that it occurs more plentifully than is suspected in the more remote agricultural districts. We have had fewer opportunities of observing the spring butterflies than those which fly in summer and autumn.

Pieris brassicae L. (Large Garden White) and *P. rapæ* (Small Garden White).—Extremely common in cultivated districts, and the numbers found on the moors are surprising, though of course much less than in the lowlands. It is not improbable that in the moorland regions the eggs may be laid on wild cruciferous plants.

Pieris napi L. (Green-veined White).—While common in the lowlands, is less so than the two last-named species. In the uplands and on the moors it is the commonest *Pieris*.

It will be seen from this short account that the butterflies are of some interest in North-east Derbyshire. The moorlands have been quite insufficiently worked and probably many unexpected facts may come to light when a more thorough examination has been made.

The extreme prevalence of the Vanessas in 1914, 1917 and 1918, even in the more low-lying districts, is worthy of notice. The winter of 1916-17 was very severe; snow began to fall in November, and parts of the moors were snow-clad from mid-December to mid-April. At Cathole there was a persistent thick coat of snow from Christmas to Easter. Probably the ichneumons and other butterfly pests were largely killed off, while the butterflies survived. It by no means follows, however, that there may not have been an abnormally high death rate amongst the butterflies themselves, as the eggs of a single pair in the absence of parasites might produce an unusual quantity of perfect insects. Thus, although the butterflies may have suffered more than usual, it would seem probable that the parasites suffered more than the butterflies.

1918 again has been rich in Vanessas. The winter of 1917-18 was not unusually severe in our area. It may be that the parasites had not recovered their predominance sufficiently to keep down the butterflies to their usual numbers.

In any case it would seem that the comparatively low number of Vanessas in normal seasons is not due to any unsuitability of the country for these insects, but to some agents, probably parasitic, which may be affected by severe winter conditions. These agents being destroyed, we find an enormous number of Vanessas making its appearance.

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Among the contents of *The Proceedings of the Croydon Natural History and Scientific Society* we notice the Presidential address of Mr. E. A. Martin on 'Nature's Air Raids: a Chapter in "Meteoritics,"' which includes references to North of England occurrences, and 'Addington: its Antiquities and Traditions,' by W. H. Mills, and an elaborate Report of the Meteorological Committee, 1917. There is also an interesting account of an Anglo-Saxon grave at Mitcham, with photographs.

NOTES ON THE ENTOMOLOGY OF THE BUBWITH DISTRICT.

W. J. FORDHAM, M.R.C.S., L.R.C.P., F.E.S.

THE village of Bubwith is situated on the left bank of the Yorkshire Derwent, about 12 miles south east of York and 7 miles east of Selby, and was at one time the centre of a large wheat growing area and boasted a market day. Before the advent of the Selby to Market Weighton Railway the produce of the district was taken away in "keels" on the river Derwent, which at that time was a busy waterway, though now somewhat neglected and in need of dredging and clearing at the sides. In these bygone days flax and teasles were grown considerably in the district, but of the latter plant not even a stray specimen is to be seen in the hedge-rows. Flax, or 'Line,' as it is locally termed, has been grown in small quantity during the past year and nothing can exceed in delicacy of colouring the appearance of a field in full bloom.

The district is flat and at the most only 25 feet above sea level, and there is not much woodland in the immediate vicinity, such small woods and plantations as occur having been thinned out recently to provide pit props and other forms of timber. I have had several specimens of *Sirex gigas* L. brought to me which have been captured during these operations of felling and sawing, and in one plantation the woodmen told me that it was frequently to be seen in flight on hot days. On one occasion in one of these small woods, I was fortunate enough to take a very small female of *S. noctilio* F.

The soil in the immediate neighbourhood is somewhat clayey and damp, but the clay gradually merges both on the east and west into the sandy commonland characteristic of the lower part of the Derwent Valley and well exemplified in Skipwith Common, which lies about $3\frac{1}{2}$ miles west of Bubwith. The underlying geological formation is Triassic, but of this there is no local outcrop.

During a residence of ten years in the district I have devoted my leisure mainly to the study of its beetle fauna and have formed a high opinion of its productiveness in this order of insects, the most interesting captures having been duly recorded in the reports of the Yorkshire Coleoptera Committee. Since the war my rambles have been very restricted and I have paid more attention to the so-called 'neglected orders.' As the list of insects taken contains a large number of species not previously recorded from the county, a short account of these may be of interest. I have selected only those species which are new or which are of particular interest and have a mass of records which extend and amplify the local distribution of many species and of which the insects here mentioned do not form a tithe.

I am greatly indebted to our referees and others for kind help in verifying and determining my captures and must specially mention the Rev. F. D. Morice and Messrs. Claude Morley and Rosse Butterfield for help with Hymenoptera, Messrs. E. A. Newbery and E. A. Butler with Hemiptera, Mr. P. H. Grimshaw with Diptera, Mr. G. T. Porritt with Trichoptera and allied orders.

The extensive Ings on either side of the river may first claim our attention. These vast stretches of meadowland are interesting and prolific at any season of the year. In the winter they are transformed into a huge inland sea by the overflowing of the river, aided intentionally by the opening of the 'Clough' doors, which allows the water to 'back' up the larger dykes and smaller drains which intersect the Ings. Acre upon acre is thus covered with water and the detritus brought down by the river when it is in flood enriches the soil and helps to produce later the luxuriant crops of meadow hay for which the Ings are noted. At times, however, the process gets out of gear and I have seen haycocks floating about in the water when, in the summer, high tides have coincided with heavy rainfall further north in the extensive Derwent drainage area. On the edges of this large sheet of water, in varying situations depending upon the height of the flood, the contour of the land, and the prevailing winds at the season, are deposited masses of the flood refuse, which has made Bubwith justly famous among English coleopterists, for the richness of this deposit in beetle life is extraordinarily marked. Other orders are well represented and the countless numbers of insects which scuttle away in every direction when a handful of the refuse is thrown on to a sheet of paper in a warm room is a revelation to anyone previously unacquainted with it. One wonders where they have all come from—some evidently travelled far (or at any rate not yet discovered in the district in their natural habitat) and others undoubtedly merely disturbed from their local haunts in the Ings. In the spring and early summer the Ings are covered with a crop of hay, and numerous aquatic and sub aquatic plants mark out the situation of the drains and give cover to a host of dragonflies, caddisflies and other allied insects. There are no species of these orders new to the county, but among 12 species of Trichoptera and about half-a-dozen Odonata the elegant *Calopteryx splendens* Harr. calls for notice as it flits gracefully along the drains. I have here taken a female *Agrion puella* L. with the blue on the abdomen of much greater extent than usual.

It is to the thistles and umbelliferous plants growing luxuriantly on the towing path that we must look, however, for many of our most noteworthy insects. A dense mass of

herbage, in some places waist-high, harbours a host of ichneumons, sawflies, aculeates and two-winged flies. Among the aculeates occur at least six species of *Andrenæ*, of one of which *albicans* Kub. the burrows are extremely abundant on the clayey towing path. The sawflies include 4 or 5 species of *Teuthredella*, 4 species of *Teuthredopsis* (of which latter genus, however, Mr. Morice says that the species are extremely hard to determine), 7 species of *Dolerus*, including **dubius* Kl. (a rare species), and **haematodes* Schr., **Arge cyaneocrocea* Forst. **Amauronematus vittatus* Lep., and a host of other commoner species, of which the most abundant and pugnacious is *Allantus arcuatus* Forst. The diptera are exceedingly well represented, but I can only here mention the abundance of *Empis tessellata* F. which I found dead and dying in large numbers one day during the last season and attribute the high mortality to a parasitic *Empusa*; and the new records **Leucorona lucorum* L., *Myopa* **testacea* L., and **polystigma* Rnd. (?), and **Cordyluna pubera* L. This latter fly was abundant in 1915, but I have not taken it since. Last but not least, at any rate, in point of obtrusiveness, the Cleg (*Haematopota pluvialis* L.) is very abundant and bites viciously, but I have not yet captured the male, though I have taken one example of this sex of the allied **crassicornis* Whbg. in the neighbourhood of Bubwith. The galls of **Dasyneura sisymbrii* Schr. occur occasionally on *Radicula sylvestris* Druce on the river bank, and those of **Clinodiplosis thalictricola* Rubs. on the Meadow Rue in the Ings.

The ichneumons are exceedingly well represented and although many new species have occurred in the district the only ones to be added to our list from the river banks are **Meloboris crassicornis* Gr. and *Tryphon* **consobrinus* Hlgr. and **brunneiventris* Gr. Concerning my consignments of Ichneumonidae to Mr. Morley, he remarks on one occasion that 'there is a curiously small percentage of common kinds' and again 'quite above the average of nice things.'

Skipwith Common is my next most frequently visited collecting ground and though well known to most Yorkshire entomologists personally, and also through the work on the lepidoptera of the Rev. C. D. Ash, deserves mention for some of its interesting insects. A wide expanse of heather, interspersed here and there with boggy patches and the famous gull ponds, and dotted over with small plantations of fir, the common is a veritable storehouse of insect wealth. The beetles I shall not mention except to refer to the fact that I bred out a species of *Phora* from a pupa of the lady bird *Mysia oblongoguttata*. (In the *Entom. Monthly Mag.*, 1918, p. 91, Mr. Champion notes

* The * indicates a new county record.

that *Phora fasciata* Fall has been bred in France from the Common 7 spot lady bird). The lepidoptera probably are well known and I have paid little or no attention to this order, but have not failed to be struck with the protective resemblance exhibited by the larva of *Panolis piniperda* on the pine needles and the likeness of *flavicornis* at rest in the perfect state to the sallow catkins among which I found several. Grasshoppers are abundant on the common, the most interesting species being *Tettix bipunctatus* L., of which I took a small dark specimen one September hibernating under the bark of a birch stump tenanted by the ant *Leptothorax acervorum* F.

Space does not permit of the recital of all the aculeates occurring on the common, but *Halictus rubicundus* Chr. had a very strong colony in a small sandpit, and *H. atricornis* Sm. also occurs, *Colletes daviesana* Sm. is not rare and also occurs on Tansy by the Derwent at Bubwith, and I have one ♀ of *C. *succinctus* L. from Skipwith.

On a sunny day in May during the season just passed I found numerous specimens of *Andrena albicans* Kub. and *gwynana* Kub. burrowing in a sandy path on the common. With these occurred *Nomada succincta* Pz. and *bifida* Th. (the former also being very abundant on white dead nettle in my garden at Bubwith about the same time), and **Sphecodes pilifrons* Th. fairly commonly together with one ♀ of *S. ferruginatus* Schr. These six species appeared to form a definite insect association. I observed a specimen of *Andrena albicans* being chased by a fly and captured both in the hope that the latter might prove to be a Tachinid parasitic on bees, but it was merely a ♀ of **Hydrotæa dentipes* F., a common species, but apparently overlooked in Yorkshire.

Among the sawflies mention may be made of *Cimbex femorata* L. and *Trichiosoma lucorum* L. (both occasionally taken on birch), *Lophyrus pini* L., the larvae of which were exceedingly abundant in September, 1912, but I failed to rear the insect: one specimen of a species of *Mesoleius* however emerging from the cocoons in the following July, **Entodecta pumilus* Kl., *Dolerus madidus* Kl. (common on one occasion on the heather) and **Teuthredella balteata* Kl., whose larva feeds on the bracken.

The ichneumons include **Phaeogenes bellicornis* Wesm., **Prionopoda stictica* F. (a rare species preying on sawflies and only recorded from the South of England), **Pimpla arctica* Zett. (a northern species), a ♀ of **Ichneumon gradarius* Wesm. (the ♂ of which is as yet unknown, but Mr. Morley thinks that a specimen which I sent him from Buckden in Wharfedale may possibly prove to be this sex of the species, which is said to prey on *Panolis piniperda* and *Charaëas graminis*).

(To be continued.)

COMMON WILD BIRDS OF THE SCARBOROUGH DISTRICT.

W. GYNGELL.

(Continued from *The Naturalist for 1918, p. 357*).

*The Pied Wagtail (*Motacilla lugubris*) Temminck.

The 'Willy Wagtail' as a summer visitor arrives in this district in small parties about the middle of March, and when brick making begins, the bird being called the 'brick maker' by the workmen in some of the brick works. It is scarce or rare in the winter season. In summer time it is generally distributed from the sea shore, where it feeds on sand-flies, up into the moors, where I have found its nest within fifty yards of a Ring Ouzel's. Its nest, placed in holes in walls, quarries or lime-kilns, in stone heaps, banks of streams or roadsides, close to the ground or ten feet above it, is composed of straw, grass, moss, wool, hair and a few feathers. In it I have found as many as seven fresh eggs, though usually six is the number laid. These are sometimes hatched as early as April 20th, but fresh eggs have been found on July 11th. They weigh .07 to .08 oz. The birds may be seen in small flocks as late in spring as May 13th, and begin to flock again by August 22nd. The Pied Wagtail sometimes perches in trees and I have seen parties of them roosting at night in beds of rushes. Here it may be heard singing from March 1st until October 2nd.

The Grey Wagtail (*Motacilla melanope* Pallas) is locally and better called the Yellow Wagtail, for it shows more yellow than grey. Newton, in his 'Dictionary of Birds,' says that 'a line drawn from the Start Point slightly curving to include the Derbyshire hills and ending at the mouth of the Tees will, it is believed, mark off its breeding range in England.' This statement is substantially correct, but the line should have been drawn to Scarborough and would then scarcely have needed any curve. Here it is a resident bird descending from its breeding haunts on the Moorland streams to the lowlands in winter, where it may be frequently seen by roadside streams and ditches. It nests within a mile or so of the borough boundaries, using as building materials moss, wool, much hair, grass and herbage stems. Eggs may be found by the middle of April. I have seen a bird settle down to roost in a laurel bush near our valley pond on a January evening. Eggs weigh .06 oz. Its call-note is less shrill and loud than the Pied Wagtails.

*The Yellow Wagtail (*Motacilla raii* Bonaparte).—A distinctly rare bird all through our district, yet a pair hatch their young every summer within the borough. In habits it resembles the Meadow Pipit more than the other common Wagtails, as also it does in its call-note 'pee-cheep.' Its nest of dead grass and much hair may be more successfully sought in the low-lying meadows of East Yorkshire. It lays six eggs each weighing .07 oz.

*The Tree Pipit (*Anthus trivialis* L.).—This charming summer visitor arrives about the middle of April and at once commences singing its loud and most varied song, usually in the top of some tall tree; occasionally it sings on a hedge or the telegraph wires and once I heard one singing whilst perched on a moorland rock. Some of its notes much resemble those of a cage canary. It commences at 2-14 a.m. on a Midsummer morning and sings daily till July 13th. Its nest may be found on the ground within or on the outskirts of woods or on roadside banks. Dead grasses, dead leaves, moss and hair, are the materials used. Though the wagtails commonly lay six eggs I have never found more than five in the nest of any species of pipit. Eggs of this species weigh .09 oz.

*The Meadow Pipit (*Anthus pratensis* L.). Resident during most of the year in field or on moor, sometimes in winter it resorts to the sea shore. Once I saw several Meadow Pipits together running about in

some swampy shallow water just as wagtails commonly do. It sings its rather feeble and monotonous song from March 10th till August 1st. It sings usually during short flights into the air, but occasionally in a tree, and I have seen it rise singing from the ground to a considerable height and descend singing to a tree-top just as a tree Pipit might do. On open moors fields, banks, cliffs and sandhills by the sea, it makes its nest of grass and hair. Eggs may be found by April 22nd and as late as July 8th. They vary very much in colour and markings although not to the extent that the Tree Pipit's eggs do. In weight also they vary much, from .07 to .09 oz.

*The Spotted Flycatcher (*Musicapa grisola* L.).—This is one of our most familiar summer visitors and is as common in our town as in the open country. It may be seen hawking for flies and the snap of its beak heard when an insect is caught, on a June evening till 8-30 p.m. It is here from May 15th till September 5th. When perched it constantly swings its tail up and down. At Castle Howard, on September 19th, 1904, it being a very warm day, one or two of these birds were very busy catching flies on the top of the stone obelisk which is about 100 feet high. They flitted backwards and forwards from the tops of the tall trees of the Avenue to the top of the monument. The nest, built at heights varying from 3½ to 10 feet above the ground, I have found in trees, open barns or sheds, posts, palings, clefts in quarries or walls. It is composed of moss, strips of bark, lichens, wool, dead grass and feathers. The beautiful eggs, never more than five in a nest, weigh .07 oz., and may be found from May 23rd onwards.

The Pied Flycatcher (*Musicapa atricapella* L.).—Unknown in most parts of England and generally rare where known; this is a regular though scarce summer visitor to our district. It nests within a mile of our borough boundaries. Although more often seen among the higher branches of forest trees, it commonly descends among the lower branches, and usually selects for breeding purposes a tree-hole from 6 to 10 feet high. One nesting site that I know in particular is a bone of contention between this species and the Great and Blue Titmouse. This bird differs much in habits from the Spotted Flycatcher. It does not so constantly take up a definite position to work from in its fly-catching, but it fans up and down with its tail in the regular way with other members of its family. The song, which is performed in the same manner as the Redstarts, is, however, shorter and the notes sharper and more titmouse like. The nearest, though very feeble word-representation that I can give is 'pink-pink, chip-chip, weet, quichy-quichy,' but it is varied with each utterance. I have heard the song from May 16th until June 23rd. The nest materials used are thin strips of bark, dead grass and a few dead leaves. Each of the pale blue eggs weighs .065 oz.

*The Swallow (*Hirundo rustica* L.).—We have seen the Swallow here from April 9th till October 1st, and have heard its delightful song or 'twittering' as others might say, from 2-35 a.m. till 8-31 p.m. Often in little parties it sings on the house roof, on telegraph wires, and not rarely in trees, accompanied by house martins. Sometimes it sings 'on the wing.' I have seen from 200 to 300 together continually singing on the telegraph wires. It sings every day it is here. When surprised by a sudden return of cold weather in spring, as at Hornsea Mere on May 27th, 1891, many die from starvation. Its nest is nearly always built in barns and other outbuildings, mud, straw, moss, grass, feathers and hair being the materials commonly used. I have never found more than five eggs in a nest, their average weight being .065 oz.

*The Martin (*Chelidon urbica* L.).—Although arriving here at about the same time as the Swallow, the Martin remains with us much longer, sometimes up to the last day in the year. Here, in addition to its usual nesting haunts under the eaves of houses and other buildings, small colonies nest on the vertical cliffs along the coast from Flamborough to

Whitby. It is most remarkable how late young remain in the nest *every* year, always till September, and sometimes as late as October 11th. In the nest of mud, lined with grass and feathers, five eggs, averaging in weight .07 oz., are laid. In building, the most sheltered position is not always chosen, sites often seem to be selected haphazard. Not infrequently the birds will select an unfinished house and build there whilst the slaters are working on the roof. Both Martin and Swallow are common in our district.

*The Sand Martin (*Cotile riparia* L.).—Coming in spring at about the same time as the Martin appears, April 11th being the earliest date that both species have been noticed. This is the earliest member of the family to disappear, never having been here after September 16th, though young have been seen in the nest on September 2nd. It haunts and nests in sandy strata in the sea cliffs, as well as river banks, and I have known it to occupy drain pipes in banks. The nest is of dry grass and feathers.

*The Greenfinch (*Ligurimus chloris* L.).—Very common here as elsewhere in England in summer or winter; large flocks may sometimes be seen in autumn. Though much less popular than the Common Linnet as a cage-bird, the 'Green Linnet' freely sings a very fine song, which may be heard from March 17th till August 16th, and in June at 8-30 in the evening. Its long-drawn note 'dree——' which always forms a part of its song may be heard as a call-note as late as November 22nd. As is the case with some other British birds, individual Greenfinches are occasionally met with having plumage of much more than the ordinary brightness of green and yellow. The nest, which may be found with eggs by April 20th, and with young as late as September 10th, is placed from 30 inches to 18 ft. above the ground, in furze and other bushes, hedges and trees. A wonderful variety of materials is used in its construction, including mosses, sheep's wool from the thorns and coloured wool beaten out of carpets, twigs, roots, feathers, grass, hair, rabbit's fur and lichens. It lays more eggs than most other finches, six and sometimes seven being laid, and these vary greatly in size and weight, ranging from .07 to .1 oz., small specimens being indistinguishable in colour and markings from those of the Common Linnet. One nest found near Scarborough, and which I saw contained three pure-white eggs. On June 30th, 1900, I saw a male Greenfinch flying round and round and up and down in the air like a bat, at about 40 feet above ground, and singing all the time. The call-note of the fledged young sounds like *Chick-oo*.

The Hawfinch (*Coccothraustes vulgaris* Pallas).—An elusive and scarce bird usually, it is too well known at least in one fine garden near Scarborough, where its annual visits to the peas are naturally much resented. Few nests are found, and the only one that I have examined was built in a quite unusual position. It was in the top of a thin branch near the top of a wych-elm tree, and 30 feet above the ground. It was composed of birch twigs and fine roots with lichens in the nest walls, and much resembled the nest of the Bullfinch, though larger and thinner, but deeper than I expected it to be. Recently it seems to have increased in numbers locally.

The Goldfinch (*Corduelis elegans* Stephens).—This is another beautiful bird that is commoner as a breeding species in our district than it was thirty years ago. I have seen and heard it in three different villages in our district in an hour's cycle run, including a brood of young ones. More than once it has nested within the borough in recent years. A variety of nesting sites are occupied here, the crown of an apple tree, the thin lateral branch of a tall sycamore or a young poplar, but the beauty of the nest is, I consider, over-rated, it not being in any way equal to that of the Chaffinch. Those I have seen have been placed from 10 to 15 feet high and composed of roots, moss, wool and horsehair. The weight of an egg is .045 oz.

*The House Sparrow (*Passer domesticus* L.).—Abundant here as in most

parts of Britain, and of the same habits excepting that I do not notice it nesting so much in trees here as in southern counties. Although not regarded as a song bird its vocal powers quite equal those of the Chiff-chaff, whilst its call and alarm notes are more varied than those of some other small birds. Hundreds of sparrows delight to sing together in chorus as starlings do, in trees or on an ivy-covered walk. Sometimes this sort of festival seems to last all day, and it may be heard from early spring till late autumn. The ordinary chirping song may be heard from January 1st till December 31st. Its fighting shindies, no more serious than a football match, I have heard on Christmas day, so these little affairs do not seem to be confined to courting times. It seems to be equally fond of dusting itself in roadways and washing in cold water. I have seen several, after bathing together, come out of the water quite drenched when the thermometer stood at 30 degrees F. I have found its nest, which is composed of dead grass, moss, feathers, paper, string and hair built in the roofs of buildings, holes in quarries, lime kilns and trees, and also in bushes, wall fruit trees, ivy and hedges. It is not a very early breeder, May 5th being my earliest finding of eggs; five or six form a 'clutch,' average weight .11 oz. I have seen several sparrows together hawking for insects, presumably gnats, on December 15th. Young birds when just out of the nest can support themselves by clinging to vertical iron railings.

The Tree-Sparrow (*Passer montanus* L.).—Of local distribution and not common in this district, it is least scarce on the level Vale of Pickering, where it nests regularly in holes in lime-kilns, in company with the House-Sparrow, holes in trees and on one occasion I found a spherical nest built in the open branches of a hawthorn bush. Close observation with field-glasses is generally necessary to identify this bird and its nest, especially where there is a mixed colony of the two species. In building, a great variety of materials are used, including grass, feathers, wool, dead and green leaves, hair and strips of bark. All the eggs that I have found have been noticeably smaller and more glossy than those of the House-Sparrow, the weight being .08 oz. May 12th is the earliest date for eggs. Quite commonly one egg is much lighter in colour, that is to say, has fewer markings than the remainder of the 'setting,' and this egg is, judging from my experience with this species, as well as other birds, the first to be laid.

*The Chaffinch (*Fringilla coelebs* L.).—The local name about here is 'weety,' but whether this name has reference to its spring call-note 'weet—ting, ting' or its white wing bars so noticeable in flight (it is called white-finch in Somerset, *c.f.* Wheatear, the bird with the white wings), I cannot say. This note, heard in spring only, is distinct from its more general call-note of 'chink,' 'pink' or 'spink' variously rendered, whence it gets its many local names, perhaps more than are bestowed on any other British bird. The song, in double quick time, may be rendered 'quick-quick-quick-quick, come and kiss me pretty little deear,' but I have a bibulous friend who declares that on hot summer days the last word is beer! The full song may be heard from February 15th until July 15th, and at Midsummer from 3 a.m. till 8-51 p.m. It is resident and abundant throughout our district all the year round, remaining in winter flocks sometimes till April 11th, afterwards paring off to nest in tree, bush or hedge. Twice I have found the nest in the cup-shaped hollow top of a tree stump. This most beautiful object and cradle is composed of moss, lichens, wool, hair, feathers, spiders' webs, fragments of dead wood, dead grass, bark, twigs, rabbit fur, dead leaves and roots, placed from 2 feet to 22 feet above ground. I have never found it to contain more than five eggs, my earliest date for which is May 1st. Their weight is .07 to .08 oz. Eggs of typical colour and marking are well enough known, but a variety approximating to those of the Bullfinch are rarely met with. I found a set of these near Scarborough some years ago. The Chaffinch is another of those birds that occasionally hawk for flies in true Flycatcher style.

(To be continued).

Naturalist.

THE SPIDERS OF YORKSHIRE.

WM. FALCONER,
Slaithwaite, Huddersfield.

(Continued from *The Naturalist* for 1918, p. 354).

Gen. *Pholcomma* Thor., 1-1.

P. gibbum Westr.

Occurs throughout the British Isles and Europe, but is not common in Ireland and in some other areas; amongst débris, grass and heather roots and fallen leaves in woods. *Adults* throughout the year. First occurrence—the author, Slaithwaite, April, 1897.

V.C. 61.—Not common, Spurn, E. A. P., T. S.; beech wood at South Cave, King's Mill Marsh (Driffield), Houghton Woods, Humber shore at Welwick, T. S.; Scampston; Skipwith Common.

V.C. 62, 63, 64.—Widely distributed and recorded stations numerous, but in some more plentiful than in others. It is common in the Huddersfield area.

Gen. *Theonoe* Sim.

(*Onesinda* Camb.), 1-1.

T. minutissima Camb.

A rare British spider now on record for Dorset, Staffs., Cheshire, Northumberland, two Irish counties, Balmoral, Rannoch, Rothiemurchus and Ben Nevis in Scotland; abroad, East France and Switzerland; mainly from damp moss in woods. *Adults* of both sexes taken most months of the year. First occurrence—the author, Drop Clough, July, 1900.

V.C. 62.—Farndale, Kildale, Eston, Gt. Ayton and Easby Moors, 'abundant,' Wilton Wood, J. W. H.; Ringingkeld Bog, two ♂s, R. A. T.

V.C. 63.—Crimsworth Dene, several ♀s by fishpond, W. P. W., W. F.; Drop Clough, freely on various dates; Bottoms Wood, Ainley Place and Pole Moor, near Slaithwaite; Wessenden Valley; Storthes Hall Wood (Huddersfield); Lower Stones Wood (Stocksmoor); Ramsden and Marsden Cloughs and Morton Wood (Holmfirth), from open sphagnum bogs; Ellen Springs (Shepley).

V.C. 64.—Adel Moor, below the Seven Arches; Sawley High Moor, many ♀s.

Fam. LINYPHIDÆ.

Sub.-Fam. ERIGONEÆ, 94-127.

Gen. *Ceratinella* Emer., 3-3.

C. brevis Wid.

Widely distributed in Great Britain and Ireland; abroad, in Northern and Central Europe and South Russia; amongst roots of grass, moss and fallen leaves. Widely diffused in Yorkshire, but very seldom in any quantity. *Adult* autumn to spring. First occurrence—the author, Dalton Lane, May, 1903.

V.C. 61.—North Cave, in ant's nest, Birkhill Wood (Cottingham), one ♂, Houghton Woods (Market Weighton), one ♂, Weedley, T.S.; Skipwith Common, one ♂, W.P.W.

V.C. 62.—Cleveland, 'every locality visited,' J.W.H.; Ravenscar, Ringingkeld Bog, Raincliff Woods, ♂s, R.A.T.

V.C. 63.—Hurst Wood, Shipley, W.P.W.; Wessenden Valley (Marsden); Honley Old Wood, Woodsome, Mollicar Woods, Grimescar Wood and Butternab Wood in the Huddersfield area; Harden Clough, Meltham; Cawthorn, sub *C. scabrosa* Cb., *The Naturalist*, 1909, p. 395.

V.C. 64.—Trench Wood, Saltaire, W.P.W.; King Wood (Adel), Alwoodley, Harewood, Linton Common, Dalton Lane; Risplith Gill and Spa Gill, Sawley; Ingleton.

C. scabrosa Camb.

Rare, noted for a few English localities from Dorset to Northumberland, and for Leinster; abroad, France and Hungary. Season and habitat as in last.

V.C. 62.—Easby Moor, Gt. Ayton Moor (very plentiful), and Eston Moor (several), J.W.H.

C. brevipes Westr.

Uncommon in Ireland and occurring in Great Britain as far north as Aberdeen and on the Continent as Sweden; with a similar habitat to *C. brevis*, but in Yorkshire more frequent. *Adult* autumn to spring. First occurrence—the author, Wessenden Valley, June, 1897.

V.C. 61.—Pulfin Bog and King's Mill Marsh (Driffeld), Kelleythorpe, T.S.; Skipwith and Riccall Commons, W.P.W., W.F.

V.C. 62.—Farndale, Easby, Eston and Gt. Ayton Moors, 'common'; Lonsdale, J.W.H.; Ringingkeld Bog, Scarborough and Thornton Dale, R.A.T.; Castle Howard and Lindale, J.F.; Goathland; Marske; Lazenby.

V.C. 63.—Blackhills (Bingley), Hurst Wood (Shipley), W.P.W.; Bottoms Wood (Slaithwaite); Drop Clough and Wessenden Valley (Marsden); Crossley Plantation (Holmfirth); Chew Valley (Greenfield); Honley Old Wood, Woodsome, Storthes Hall Wood, Butternab Wood, near Huddersfield; Harden Clough (Meltham); Hebden Bridge and Crimsworth Dene.

V.C. 64.—Elam Wood, Keighley, W.P.W.; Sawley District, S.M., W.F.; Moor Allerton, near Leeds; Birk Crag, Harrogate.

Gen. *Lophocarenum* Menge, 2-3.

L. nemorale Bl.

Widely distributed in the British Isles, but not generally common; abroad, France and Hungary; apparently local in Yorkshire; amongst grass, herbage, moss, etc. *Adult* autumn to spring. First occurrence—T. Stainforth, Spurn, May, 1909.

V.C.—Spurn, many ♀s from amongst seaweed drift on Humber shore, Sandholme, one ♀, Houghton Woods, ♀, Boynton Woods, one ♀, T.S.

V.C. 62.—Beast Undercliff, Staintondale, ♀, T.S.; Whitby Road, Scarborough, ♀, and Ringingkeld Bog, both sexes, amongst pine needles, R.A.T.; Great Hograh, ♂, J.W.H.

V.C. 63.—Dean Head, Scammonden, ♀, in an old barn.

V.C. 65.—Coverham, one ♀, W.E.L.W.

L. mengii Sim.

A rare and local spider, but often plentiful where it does occur; noted for Cumberland, Northumberland, Staffordshire, Connaught and Ulster; abroad, France, Austria-Hungary and the Tyrol; in dry ground at roots of heather and bilberry and under stones; chiefly, however, at the roots of grass and rushes and amongst moss in moist places. *Adult* males have been taken from September to July, ♀s throughout the year. First occurrence—the author, Wessenden Valley, June 1st, 1898.

V.C. 62.—Eston, Turkey Nab and Gt. Ayton Moor, not uncommon, from rushes and from ants' nests, Wilton Wood, J.W.H.; Kildale Woods, ♀, W.P.W.; Ringingkeld Bog, both sexes, R.A.T.

V.C. 63.—In almost all the wet places on the moors about Huddersfield; Ainley Place, Wholestone Moor, Cupwith, Shred, Dean Head, Jerusalem Farm, Bottoms Wood, all near Slaithwaite; Drop Clough, Wessenden Valley, Clowes Moor, Standedge, and Pule in

the Marsden district; Chew Valley, Bill's o' Jack's, Saddleworth and Isle of Sky; Marsden Clough and Hades Valley, Holmfirth; Dunford Bridge; Crosland Moor (Huddersfield). In several of the above localities in drier ground also.

V.C. 64.—Sawley High Moor, S.M., W.F.

Gen. *Cnephlocotes* Sim., 5-7.

C. obscurus Bl.

Widely distributed in Great Britain and on the Continent (France, Belgium, Germany and Sweden); recently taken in County Down and County Carlow, Ireland; very rarely in any quantity; amongst moss and at the roots of grass and rushes, usually in wet ground.

Adult autumn to spring. First occurrence—the author, Slaithwaite, October, 1898.

V.C. 61.—Market Weighton, on the road to Holme-on-Spalding Moor, ♀, Houghton Woods, one ♂, one ♀, Birkhill Wood, one ♂, one ♀, Kelsey Hill, ♀, Snake Hall and Moor, ♂, ♀s, Humber shore at Welwick, ♀s, Brantingham Dale, Sunk Island, one ♂, two ♀s. T.S.; Skipwith Common, ♂s and ♀s, W.P.W., W.F.

V.C. 62.—Eston, uncommon, J.W.H.

V.C. 63.—Black Hills, Bingley, ♂, and Hurst Wood (Shipley) ♂, W.P.W.; *Slaithwaite District*—Bottoms Wood, Lane, Merridale, Barrett Clough, Ainley Place, Wholstone Moor, Slaithwaite Moor, Cupwith, Pole Moor, and below Dean Head Church; *Marsden District*—Drop Clough, Wessenden Valley, Marsden, Standedge, Clowes Moor, Harden Clough, Saddleworth, Butternab Wood (Huddersfield); Crimsworth Dene.

V.C. 64.—Valley of Desolation, Bolton Woods, ♀, W.P.W.; Ilkley Tarn; Ingleton, ♀; Clapdale (Ingleborough), ♂; Sawley High Moor, ♂; Adel; Alwoodley Gates.

C. elegans Camb.

A rare spider, on record for Scotland, Snowdon, Wicken Fen, Cumberland, Northumberland, Staffordshire, Cheshire and Ireland (Kerry); habitats as in preceding. *Adult* autumn to spring. First occurrence—the author, Slaithwaite, March, 1901.

V.C. 61.—Skipwith Common, both sexes, W.P.W., W.F.

V.C. 62.—Redcar, rare, Eston Moor, one ♂, J.W.H.; Ringingkeld Bog, ♂, two ♀s, R.A.T.

V.C. 63.—Both sexes, Ainley Place, below Dean Head Church, Drop Clough (numerous); ♂s, Bottoms Wood, Scout Wood, Cupwith, Wilberlee (aeronaut), Wessenden Valley, Chew Valley, Dunford Bridge.

V.C. 64.—Malham, two ♀s; Clapdale, both sexes; Compton Bank Top, ♀.

C. interjectus Camb.

A local spider, but usually plentiful where found; on record for Hertfordshire, near London, Sussex, Dorset, Northumberland, Edinburgh, Leinster and Ulster; abroad, Holland; generally met with on or near the coast. *Adult* autumn to spring.

V.C. 61.—Cottingham Marsh, three ♂s, two ♀s, King's Mill Marsh (Driffeld), one ♀, Hessle Chalk-pits, one ♀, and Leconfield, one ♂; all 1915, T.S.

V.C. 62.—Redcar, common, more than thirty under one stone on the beach, J.W.H.; amongst flat tufts of *Atriplex*, east of promenade, abundant; Teesmouth; all 1909.

C. curtus Sim.

Another rare coast spider on record for Findhorn Sandhills, Ras-carrel, Arran, and near Edinburgh (Scotland), Northumberland, North Lincolnshire, Southport, St. Leonard's; Connaught and Ulster (two localities); abroad, also very rare, from Mediterranean

shores only. *Adult* autumn to spring. First occurrence—T. Stainforth, Marfleet, November, 1908.

- V.C. 61.—Humber bank at Marfleet beneath estuarine plants on flat surface next the mud of the river, both sexes, near Earle's Yard and New Joint Dock, Hull, two ♂s, one ♀, and Sunk Island, both sexes, T.S.; Saltend Common, ♀ and Welton, ♀, E.A.P.

C. ambiguus Camb.

A very rare spider, Britain only; Arran, Scotland, one ♂ (*Proc. Dorset Field Club*, Vol. XXVI., p. 67, wrongly given Bute), Findhorn Bay, Moray, numerous; usually mud-flats.

- V.C. 62.—Easby Moor, nearly 1,000 feet, several of both sexes, June 1st, 1914, amongst moss and liverworts, J. W. H., *The Naturalist*, January, 1915.

Gen. *Tiso* Sim., 1-2.

T. vagans Bl.

Widely distributed in the British Isles and in Western Europe, rare in Eastern Europe; at the roots of grass and other herbage and heather, among vegetable debris and under stones. *Adult* throughout the year. First occurrence—the author, Slaithwaite, June, 1897. Extensively diffused through the county, but not reported as common except V. C. 61, Redcar, and V. C. 63, in the south-west Pennine valleys.

- V.C. 65.—Y.N.U., Upper Teesdale.

Gen. *Araeoncus* Sim., 2-3.

A. humilis Bl.

Widely distributed in the British Isles and on the Continent; Isle of Man, 1908; usually common; various situations on the ground. *Adult* throughout the year. First occurrence—the author, Leeds, December, 1905.

- V.C. 61.—Widely diffused, and in many places not uncommon, notably on or near the Humber shore, T. S., W. F.

- V.C. 62.—Redcar, beneath tufts of *Atriplex* on a rubbish heap. east of promenade, both sexes in extraordinary abundance; Teesmouth; Eston.

- V.C. 63.—Sewage works, Glasshoughton, ♂ (J. W. H. Johnson); Roundhay Park, ♂, and Scarcroft Hill (Thorner) near Leeds; Woodend Malt Works, Mirfield, both sexes, many; Farnley Tyas.

- V.C. 64.—Bolton Woods, one ♂.

A. crassiceps Westr.

A rare but widely distributed spider, recorded for Newton Moss (Penrith), Cheshire, Dorset, Northumberland; Isle of Arran and Loch Leven in Scotland; Ulster and Connaught; abroad, Sweden, Bavaria, France.

- V.C. 64.—Between Middle House and Malham Tarn, but nearer the latter place, an adult female from grass roots in a dried-up spot, June 9th, 1911.

Gen. *Troxochrus* Sim., 4-4.

T. scabriculus Westr.

Widely distributed in Gt. Britain and on the Continent; uncommon in Ireland; partial to sandy ground and therefore most generally met with on the sea coast. *Adult*—autumn and spring. First occurrence—J. W. Harrison, Redcar, 1909.

- V.C. 61.—Bridlington, T. S.

- V.C. 62.—Redcar and Leven Bridge, J. W. H.; Marske and Redcar.

- V.C. 64.—Ingleton, three localities.

T. cirrifrons Camb.

Usually found in company with the preceding, some authorities considering it a true species, and others as a mere variety of

T. scabriculus, regarding the two as one species with dimorphous males. The latter are easily differentiated by well marked cephalic differences; the females are practically undistinguishable, but the Rev. O. Pickard Cambridge publishes figures (*Proc. Dorset Field Club*, Vol. XXXI., 1910), based mainly on the following which he believes will serve to separate this sex also. Habitat and season as in the last. First occurrence—the author, Marske, August, 1909.

V.C. 62.—Marske, six ♂'s, and many females, an unmixed collection from short grass edging a bare sandy spot to the east; Teesmouth.

T. ignobilis Camb.

Very rare, on record for Dorset, Glamorgan and Northumberland; abroad, France and Bavaria. *Adult* in spring.

V.C. 62.—Eston Moor, quite common with *Hypselistes jacksonii* Camb., less commonly, Normanby Intake, Easby Moor and in Lonsdale generally, J. W. H.

T. hiemalis Bl. (*Diplocephalus speciosus* Camb.).

Widespread in the British Isles and on the Continent (Sweden, Holland, France and Central Europe); amongst dead leaves, moss and grass roots. *Adult* autumn to spring. First occurrence—the author, Wessenden Valley, June, 1899.

V.C. 61.—Broomfleet, E. A. P.; Waudby Green, Houghton Woods and Folkton, (females), Snake Hall, several of both sexes, Brantingham Dale, T. S.

V.C. 62.—Eston, Wilton Wood, Westerdale, Greenhow Botton, and Farndale, 'pretty common,' J. W. H.; Raincliff Woods and Ringingkeld Bog, both sexes, R. A. T.; Castle Howard, J. F.

V.C. 63.—Both sexes—Bottoms Wood and Merridale, Slaithwaite; Drop Clough, Wessenden Valley and Clowes Moor, Marsden; Chew Valley, Greenfield; Honley Old Wood; Holme Moss, Hades Valley, Marsden and Ramsden Cloughs (Holmfirth).

V.C. 64.—Sawley High Moor, S. M., W. F.; Malham; Chandler's Whin (York); Bolton Woods.

Gen. *Caledonia* Camb., I-I.

C. evansii Camb.

A rare spider, a variety of the Kamtschatkan, *C. aliena* Kulcz., noted for Cumberland, Westmorland, Lancashire, Northumberland; Lead Hills, Pentlands, Cairngorm and Ben Macdhui; unknown in Ireland and on the Continent; roots of grass, herbage and heather and beneath stones. *Adult* autumn to spring; ♀s throughout the year. First occurrence—the author, Wessenden Valley, October, 1900.

V.C. 62.—Eston Moor (common), Wilton, Normanby Intake and Westerdale Moor, J. W. H.

V.C. 63.—Common in many of the following localities:—Windsor Castle, Jerusalem Farm, Blackmoorfoot, Wholestone Moor, Pole Moor, Royal Clough, Merridale, Dean Head, Slaithwaite Moor, Cupwith (Slaithwaite district); Drop Clough, Wessenden Valley, Standedge, Isle of Sky, Clowes Moor (Marsden district); Saddleworth; Chew Valley, Greenfield; Crossley Plantation and Marsden Clough, Holmfirth; Crosland Moor, Butternab Wood and Outlane, Huddersfield.

V.C. 64.—Ilkley, W. R. B.; Ingleborough, above Clapdale, both sexes, and on summit.

(To be continued)*

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The following is copy of a printed label issued by a Dutch bulb-grower :
'If the Snowdrop not are true the named and colour, received the buyers it money back.'

YORKSHIRE NATURALISTS AT LEEDS.

By the kindness of the Council of the University of Leeds the fifty-seventh Annual Meeting of the Union was held at the University on Saturday, the 7th December.

The Union greatly appreciated the honour of again being permitted to hold its gathering at the University, the facilities available being such as to make the meeting a success, further enhanced by the efforts of the local Societies, ably carried out under the supervision of the President of the Union.

The attendance at the meeting of the General Committee, at which the President occupied the chair, was excellent, twenty-seven of the thirty-four affiliated Societies being represented. The Annual Report for 1918, and Excursion programme for 1919, were adopted. The announcement that Dr. W. G. Smith, B.Sc., Edinburgh, had been elected President of the Union for 1919 was most heartily received. The financial position was lucidly explained by the Hon. Treasurer, Mr. Edwin Hawkesworth, and although the working expenses during the year had exceeded income to the extent of £22 19s., the consensus of opinion subsequently expressed was that this loss, considering the great increase in cost of printing, etc., was not discouraging. Discussion ensued as to the best course to pursue during the coming year to meet increased liabilities, and it was ultimately decided to leave this question to be dealt with by the Executive. Mr. H. B. Booth suggested that those present should subscribe towards the loss on the year's working, and slightly more than one half the amount of this loss was thus raised. The subscription list is still open, and donations, however small, will be gratefully received by either the Hon. Treasurer or Hon. Secretaries. The Balance Sheet was adopted.

A vote of thanks was accorded to the retiring officers, who were unanimously re-elected. On behalf of the Doncaster Scientific Society, Dr. H. H. Corbett and Mr. M. H. Stiles kindly invited the Union to hold the annual meeting for 1919 at Doncaster, and this invitation was cordially accepted.

Mr. H. B. Booth reported as to correspondence from the West Riding County Council to the Wild Birds and Eggs Protection Committee of the Union, asking for the opinion of the Union upon the question of complete protection for the Lapwing in the West Riding, and he moved the following resolution, which was seconded by Mr. L. Gaunt, and carried unanimously, viz. :—

'In view of the extreme usefulness of the Lapwing (Green Plover or Peewit) to agriculturalists, it being a bird without a single fault, we consider that both the bird and its eggs should receive complete protection in the West Riding. We would also recommend that it should be made an unlawful

offence to offer for sale either the Lapwing or its eggs in this Riding."

On the proposition of Mr. E. W. Wade, seconded by Mr. Sheppard, it was resolved that a similar resolution be sent to the East Riding County Council, and on the proposition of Mr. D. W. Bevan, seconded by Prof. Kendall, it was resolved that a similar resolution be sent to the North Riding County Council.

Mr. Sheppard referred to the recent formation of the Yorkshire Natural Science Association, and asked if the objectives of this Association would be in conflict with the work carried out by the Union. The President said he had been connected with the birth of this new Association, whose main objective was for the exchange of views on the teaching of the academic aspects of Botany, Zoology, and other sciences, as stated in the circular convening the inaugural meeting. The Association had no thought of competition with the Union, and if there had been any possibility of conflict he would have had nothing to do with the new Association.

The Lecture Theatre was quite full at the evening meeting. Prof. Garstang, M.A., D.Sc., F.Z.S., occupied the chair, and was supported by Prof. Gillespie, M.A., the Pro Vice-Chancellor of the University, and past Presidents Prof. P. F. Kendall, M.Sc., W. Denison Roebuck, M.Sc., Dr. Harold Wager, F.R.S., the Hon. Treasurer and the Secretary. Prof. Gillespie, on behalf of the University Authorities, extended a hearty welcome to the members of the Union. After an epitome of the Annual Report had been given, and five new members elected, Prof. Garstang delivered his presidential address, on "Nature and Man," from the chair.

After expressing thanks to the members of the Union for the honour accorded to him in adding his name to the list of Presidents of the Union, Prof. Garstang said that the point he desired to discuss was the statement made at various times during the war, that the recent titanic struggle has been a phase of what was known as the struggle for existence. His address involved to some degree a survey of certain of the evolutionary processes which, he hoped, would challenge criticism. After dealing with the question as to whether the war was a magnification of the struggle for existence, he then by skilful method of illustration from the animal and insect worlds, showed that both animals and insects had progressed by industry rather than by fighting.

Indeed, it was much nearer the truth to state that the struggle was carried on in the living world not by war, but by industry, and the result of progress was attained not by direct assault upon competition, but by development of special and more efficient methods. There were many morals to be derived from the illustrations given by him, and the Germans

themselves, when they had recovered their senses, would have reason to thank the Allies for teaching them a lesson in time to save both them and humanity from a headstrong rush along the wrong road of evolution. The life of humanity had endured a severe strain during the past four years, and it behoved every good naturalist to attack at once, and sharply, any pretentious phrases which gained currency to put a biological gloss upon the cause of the recent conflict. The attempt to trace the outbreak of the war to 'biological necessity' was absolutely devoid of foundation. At the close of the address, upon the motion of Mr. Booth, seconded by Mr. A. Haigh Lumby, Prof. Garstang was very heartily thanked, as well as for his services to the Union during his year of office.

At the close of the meeting a *Conversazione* under the auspices of the inviting Societies, the Leeds Naturalists' Club and Scientific Association, Leeds Geological Association, Leeds Co-operative Field Naturalists' Club and the Leeds Conchological Club, was held in the Biological Department of the University. Here was placed on view an excellent array of exhibits contributed by the following gentlemen: Shells from the 'Nelson' collection, the property of the University; *Helix busbyi* from the Northern Island of New Zealand, and Cowries, with note upon their economic uses, by Mr. W. Denison Roebuck, M.Sc.; varieties of *Helicella virgata* collected at Dublin, Scarborough, Blackpool and Crossgates, near Leeds, by Mr. J. A. Hargreaves; pearl mussels with pearls, by Mr. A. F. Thornes; Local Lepidoptera, by Mr. G. B. Stanger; Exotic Long-horned beetles, by Mr. E. C. Horrell; herbarium sheets of plants collected in Cheshire and North Wales, Anglesea, Carnarvon, and the sand dunes of South Lancashire, by Mr. Charles Waterfall; herbarium sheets of plants illustrative of the flora of Upper Wharfedale, and also plants of the Leeds District, by Mr. Thomas Cockerline; Alien plants by Mr. E. C. Horrell; a rare moss, *Tetraploden worms-kjoldii*, in fruit, gathered at Widdybank, Teesdale, with explanatory notes thereon, by Mr. W. H. Burrell; coloured lantern slides of flowers and insects, by Mr. C. A. Cheetham; specimens of Yorkshire peat, and the result of investigations of their constituents, by Miss Whitaker; Jurassic plants of the Estuarine series of the Yorkshire coast; and microscopical geological slides, by Dr. A. Gilligan, B.Sc. Light refreshment was provided by the inviting Societies. The appreciation of those present was voiced by Dr. Corbett, seconded by Mr. W. P. Winter, B.Sc., to the authorities of the University of Leeds for the use of rooms, and to the inviting Societies for their hospitality and services in making the local arrangements, the response of Mr. W. H. Burrell bringing to a close another very successful gathering of the Union.—W.E.L.W.

NOTES ON ARCTIC-ALPINE MOLLUSCA.

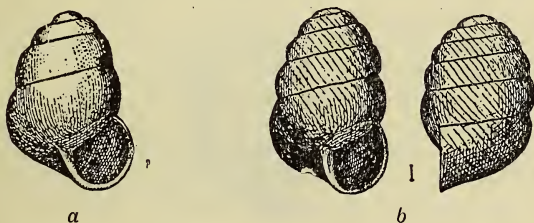
HANS SCHLESCH.

*Hellerup, Denmark.**Pupa (Vertigo) genesii* Gredler.

Testa minima, subperforata, ovata, obtusa, obsolete striata, nitidula, purpureo-cornea, anfractibus $4\frac{1}{2}$ convexis, apertura subsemicirculari, edentula, peristomate incrassato, fucato, expansiusculo, callo tenuissimo juncto (Gredler).

Alt. 2 mm., lat. 1 mm.

Pupa genesii is a typical arctic-alpine mollusc. It was first observed by the late Prof. Gredler in 1853, at St. Genesien, near Botzen (Tyrol), two specimens* being found, and in after



a—*Vertigo genesii* Gredler.

b—*Vertigo eumicra* Bcurguigrat.

years further specimens were obtained at Salten (Tyrol), at a height of 5,000 feet above sea level, where it lives on stones on a wet slope only a few square yards in extent.† Gredler adds that it is remarkable that this species, together with *Carychium minimum*, seem to prefer the neighbourhood of water. Recorded also by Geyer, from Tret, in Monsberg (Tyrol).‡

In Germany, Geyer‡ records *Pupa genesii* from a moor near Kieslegg in Allgäu (Württemberg), but it is found fossil in several places, as in Thuringia, (Weimar, Mosbach), Bavaria (Munich and Ismaning)§, Württemberg (Wolfegg and Böblingen); and Geyer holds|| that *Pupa genesii* migrated from Thuringia and the Rhine valley to the High Alps and Northern Europe.

In Northern Europe it is, as far as I know, only found in

* Gredler: Tirols Land-und Süsswasser-Conchylien, Wien, 1856-59, pp. 122-23

† Gredler: Neues Verzeichnis der Conchylien von Tirol und Vorarlberg mit Anmerkungen, Bozen, 1894, pp. 19-20.

‡ Geyer: Ueber die im Niederschwaben während des Quartärs erloschenen Molluscen (Jahrb. u Mitb. d. Oberrh., Geol. Ver. Heft. 2, 1913).

§ Schröder: Die Conchylien des Münchener Gebiets von Pleistocaen bis zur Gegenwart (Nachr. d. D. Malak. Ges., 1915, pp. 112-121).

|| Geyer: Die Weichtiere Deutschlands, Stuttgart. 1909, p. 109.

Sweden. Erland Nordenskiöld found living specimens at Östersund,* Jämtland, but the specimens Westerlund refers to in his works, as from Wästergötland, collected by Prof. Lilljeborg, are fossil. By Dr. Odhner it was found fossil at Skultorp in Wästergötland † and Rangilstorp in Östergötland.

Further, *Pupa genesii* is found in Siberia at Werschininskoj 68° 55' and Krasnojarsk.

Vertigo eumicra Bourguignat is found in Switzerland on the ruins of Habsburg near Meggen, and at St. Moritz in the Engadine, and is probably only a form of *Pupa genesii*.

Pupa (Vertigo) alpestris Alder.

(Syn. *P. shuttleworthiana* Charpentier.)

'Testa cylindracea, nitida, pellucida, subtiliter sed regulariter striatula, lutescenti-cornea; anfractibus 5, convexis, sutura profunda, pone aperturam, valde ascendente, separatis, apertura semi-ovalis, 4-dentata: dente parietali 1, compresso, lamelliformi; columellari 1 acuto, palatalibus 2, lamelliformibus, præsertim inferiori, eburneis; peristoma album, marginibus callo tenui junctis, margine dextro subsinuato, brevissime expanso, superne forte arcuato, columellari curvato.' (Westerlund).

Alt. $2\frac{1}{4}$ mm., lat. $1\frac{1}{5}$ mm.

Pupa alpestris Alder was first obtained in England at Lipwood House, in Northumberland, by J. Thompson, and named by Alder.‡ In England, according to Lionel E. Adams,§ it is confined to a few of the northern counties, with the exception of a single locality at Coleraine in Ireland.

In the Scandinavian peninsula it is probably found from the south to the northermost parts, but only a few localities are noted. In Sweden it was first found by Wallenberg|| at Quickjock (67-68° N.). Westerlund¶ records it from Öfvedskloster and Belteberga in Scania, Ronneby (Blekinge), Borgholm and Ismantorusborg (Öeland), Westerås (Westmannland), Kungshamn and Stora Ängviken on Wermdöen near Stockholm. In Norway, Friele obtained *Pupa alpestris* at Bergen and on Malmöen near Kristiania, and Jensen from Langesund;

* Odhner: Mollusken aus Kalktuffen von Östergötland (Arkiv. för Kemi, Mineralogi och Geologi), Bd. III., Stockholm, 1910, p. 3.

† Odhner: Die Entwicklung der Molluskenfauna in dem Kalktuffe bei Skultorp in Wästergötland (Geol. Förhandl.), Bd. 32, Stockholm, 1910, p. 1113.

‡ Alder: Trans. Nat. Hist. Soc., Northumberland II., 1830, p. 370.

§ Adams, Lionel: The Collector's Manual of Brit. Land and Fresh-water Shells, Leeds, 1896, p. 99.

|| Wallenberg: De Molluscis Lapponiae Lulensis, Berolino, 1858, p. 20.

¶ Westerlund: Sveriges, Norges och Danmarks Land och Sötvatten-Mollusken, Stockholm, 1871-73, p. 267.

Brevik, Börseöen near Skien.* Miss Esmark records it from Revalanjarg in Porsangerfjord† and Brevik on Tromsöen.‡

In Finland it occurs commonly throughout the country, and Luther § records it from several places. Kasbergot and Jomala (in Åland Isles), Pargas, Vasa, Björneborg, Åbo, Run-sala, Kulho Ispois, St. Karins, Pikis on Kustö, Karislojo, Lojo, Sammatti, Nummis, Nordsjö near Helsing, Härtonces, Meilans, Degerö, Nevas in Sibbo, Andersberg in Mäntsälä, Javastehus (Luopiois), Hogland, Viborg, St. Johannes, Yläne, Sääminki, Parikkala, Kirjavalaks in Sordavala, Jaakimvaara, Ylistaro, Jyväskylä, Palokkajärvi, Lohikoski, Vesanto, Kuopio, Hirvilaks, Kortejoki, Pieal, Melalahti in Paltamo, Kuhmoniemi, Suomussalmi, Kiiminki, Sodankylä, (between Kultala and



Vertigo alpestris.

Rovannen), Kantalaks (c. 67° N.), Ischkarajoki and Kuoppaniva near the shore of Anarjoki, and at Elvenæs in Varanger.

In Denmark it is very rare and only obtained in a few localities in Zealand: Sorgenfri, Gribskov, Ermelund and Ordrup near Copenhagen (Steenberg).||

In Germany it is recorded from several mountain slopes in the Mittelgebirge (Geyer), the Silesian mountains, the Moravian valley, Riesengebirge, Bavarian Alps (Isergebirge) and from the Lahn valley in Nassau.¶

From the Hartz mountains Goldfuss ** cites: Hartenberg near Wernigerode, Regenstein near Blankenburg, Hirschgrund

* Brogger and Jensen: Indberetning om en i sommeren, 1870, foretagne Rejse i Kristiania og Kristiansand, Stift, etc., Kristiania 1872.

† Esmark and Höyer: Die Land-und Süßwasser Mollusken des Arctischen Norwegens (Malak. Blätter, 1886, p. 106).

‡ Esmark: Land and Freshwater Mollusca in the Arctic Regions of Norway, Tromsö, 1882, p. 99.

§ Luther: Land-och Sötvattengaströpodernas utbredning i Finland, Helsingfors, 1901, p. 76.

|| Steenberg: Blöddyr I., Landsnegle, Köbenhavn, 1911, p. 165.

¶ Clessin: Deutsche Excursions Molluskenfauna, Nürnberg, 1884, p. 264.

** Goldfuss: Die Binnenmollusken Mittel-Deutschlands, Leipzig, 1900, p. 157.

near Thale in Bodethal, Mägdesprung in Selkethal, Alexisbad and Ascherleben. Fossil it is found in the old Pleistocene beds near Weimar, Taubach (Thuringia),* and in löss at Mosbach by Biebreich near Rhine (Brömme).

Moreover, *Pupa alpestris* is found in Switzerland (Bex, Canton Waadt, Steinerberg, in Ahrenthal and Basel), Italy (Pisa), Friaul, Görz (Erjavu 1877), Tyrol (Ferrara Alps in Grödnerjöchl, 6,000 feet, Kollern, 3,960 feet, and Virgl near Botzen, Lengmoos in Ritten, Finsterbrücke, St. Jodok in Brenner Pass),† Oberglaming in Salten, Moostengelchen, Nonsberg near St. Felix, and Moos in Passlier),‡ Carinthia (Valentin Alps: Mooskofels).§ Galicia (Wedlug, Jachny, Cracow);|| Hungary (Tatra near Czebrathey), and Transylvania (Vajda Hunyad and Vulcan Pass).¶ It also occurs in Estland (Glint in Katherinenthal and Marienberg near Reval),** throughout Russia, Siberia (Jenissei near Podk, Tunguska, Krasnojarsk, Irkutsk, Kultuk near Lake Baikal), Amur (Schilkinoskoi Savod in Dauria, Kidsi, near River Amur) and Kamchatka).††

Finally *Pupa gouldii* Binney, is widely distributed in North America and is probably identical with *Pupa alpestris*.

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Yorkshire Herons.—Mr. Booth refers on p. 392, to 'a pair of Herons which nested successfully in Bolton Woods.' This nest was not strictly in Bolton Woods, but in an adjoining coppice above them. Only one young one left the nest. There were four eggs originally, one being thrown out of the nest early on. Of the remaining three two hatched, one of which got its leg broken when quite small. The last time I went up (25th May), the nest was well out on one of the topmost branches of a huge old Scotch Fir—the sound youngster was at the remote end of the wood where I saw him fed, the cripple still being in the nest, very thin and emaciated. I tried to reach him to put an end to his misery, but he wriggled out to the extreme end of the branch, where, of course, he was out of reach on account of my weight.—WILLIAM ROWAN.

* Weiss: Die Conchylienfauna der altpleistocänen Travertine des Weimarisch.—Taufbacher, Kalktuff—beckens (Nachr. d. D. Malak., Ges. 1897, p. 145-163; 185-190).

† Blume: Die Mollusken von St. Jodok am Brenner (Nachr. d. D. Malak., Ges. 1906, p. 101-109).

‡ Gredler: Tirols Land-und Süswasser—Conchylien, Wien, 1856-59, p. 129.

§ Gallenstein: Die Gastropoden Kärntens, Klagenfurt, 1900, p. 110. Bakowski: Mieczaki, Lwowie, 1892, p. 107.

¶ Clessin: Die Molluskenfauna Oesterreich-Ungarns und der Schweiz, Nürnberg, 1887, p. 276.

** Luther: Verzeichnis der Land-und Süswasser-Mollusken der Umgeb. Revals, Helsingfors, 1901, p. 9.

†† Westerlund: Sibiriens Land-och Sötvatten-Mollusker, Stockholm, 1877, p. 44.

A YEAR'S SCIENTIFIC WORK :

being

THE YORKSHIRE NATURALISTS' UNION'S FIFTY-SEVENTH ANNUAL REPORT

FOR 1918.

(Presented at Leeds, 7th December, 1918).

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The Fifty-Sixth Annual Meeting was held at Wakefield on Saturday, 8th December, 1917. A report of this successful meeting appeared in *The Naturalist* for January, and our journal also contained Sir Archibald Geikie's Presidential Address on 'A Yorkshire Rector of the Eighteenth Century.'

Five Field Meetings have also been held, viz. :—to Barnard Castle (Whit week-end), May 18th to 20th; Market Weighton, June 15th; Crosshills, July 13th; Settle (August Bank Holiday week-end), August 3rd to 5th, with the British Ecological Society; the Mycological meeting was held at Selby, with the British Mycological Society, September 7th to 12th. These joint meetings were very successful and proved to be mutually advantageous. The attendance at these gatherings, considering the war conditions, was quite satisfactory. The usual excursion circulars were issued, and detailed reports of all the excursions have appeared in *The Naturalist*.

The Excursions for 1919 will be as follows :—

Yorks. N.E.—Coxwold (Easter Week-end), April 19th to 21st.

„ S.W.—Ryhill, nr. Wakefield, Thursday, May 15th.

„ N.W.—Hawes (Whit Week-end), June 7th to 9th.

„ Mid.W.—Pateley Bridge, Saturday, July 5th.

„ S.E.—Spurn or Hornsea (August Bank Holiday week-end), August 2nd to 4th.

Mycological Meeting, Helmsley, in September.

Annual Meeting, Doncaster, December 6th.

The Membership of the Union is now 333. The following new members have been elected during the year, viz. :—

The Rev. Frank B. Butterfield, L.Th., 34 Mount Preston, Leeds.

Miss F. Vera Greenwood, B.Sc., Stoodley Hall, Todmorden.

Mr. Thomas Fenton Greenwood, 9 Eiffel St., Hebden Bridge.

Mr. Sam Gibson, Primrose Cottage, Hebden Bridge.

Mr. Joseph Harper, 14 Otto Terrace, Sunderland.

Mr. F. E. Milsom, B.Sc., 53 Merton St., Huddersfield.

Mr. A. Nicholson, 34 Quarry St., Woodhouse, Leeds.

Mr. H. Pollard, 1 Warren Terrace, Wakefield.

Mr. A. A. Pearson, F.L.S., 59 Southwark St., London, S.E. 1.

Mr. Harry Stansfield, Ribstone St., Bankefields, Mytholmroyd.

The Rev. Cecil F. Tomlinson, M.A., The Rectory, Bolton Abbey.

Mr. Albert Thornes, 151 Town St., Armley, Leeds.

Mr. R. S. Wimpenny, 19 North Lane, Headingley, Leeds.

Mr. A. E. Winter, 39 Esplanade Road, Scarborough.

Sorby Scientific Society, Sheffield.

Whitby Literary and Philosophical Society.

The Affiliated Societies now number 34; the Sorby Scientific Society and Whitby Literary and Philosophical Society joined during the year. The statistics furnished by these Societies show that their total membership is 2,194. This, added to the membership of the Union, makes our total numerical strength 2,530.

Obituary.—We regret to record the deaths of Mr. Matthew B. Slater, Malton; Mr. J. H. Howarth, J.P., F.G.S. (a past Treasurer of the Union), and Mr. W. Lower Carter, M.A., F.G.S., Watford. 'In Memoriam' notices of these gentlemen have appeared in *The Naturalist*.

Divisional Secretaries.—The gentlemen officiating in this capacity have again been most useful in making the local arrangements for the excursions.

VERTEBRATE ZOOLOGY SECTION.

West Riding.—Mr. H. B. Booth writes:—Those species of birds which suffered so greatly, and had their numbers reduced in varying degrees, by the severe winter of 1916-17, have, for the most part, recovered almost to their normal numbers in the West Riding. An exception, however, is the Goldcrest; both in the winter and summer birds. As an instance, the writer regularly visits three former constant nesting sites of the Goldcrest. In 1917 all were vacant; in 1918 only one of the three was again occupied. Fieldfares, and also Redwings to a lesser extent, were conspicuous by their absence, or by their extreme rarity, in the autumn of 1917, and during the winter following. However, in March, April and early May of 1918, many flocks of these birds passed on their journey north. It would almost appear as if their journey south in the previous autumn had been altered, or diverted, from its usual channels. A pair of Grasshopper Warblers, reported by Mr. R. Butterfield, reared two broods near Keighley, on almost exactly similar lines ('reeling' behaviour, etc.) as the pair at Bingley in 1915 (*The Naturalist*, 1916, pp. 167-170 and 199-203). Mr. C. A. Cheetham informed me that two, possibly more, pairs of Grasshopper Warblers frequented Austwick Moss this season, and also that he had heard a bird of this species 'reeling' at Guiseley on the 21st and 27th of July. Mr. T. Roose reported a pair of Herons nesting in Bolton Woods, in a large Scots Pine, in a secluded part of the Woods. When I was there on May 11th, large young ones were in the nest. This is the first occurrence of the nesting of the Heron in Bolton Woods, and is probably due to tree-felling near some of the older local heronries. Mr. W. H. Parkin and Mr. W. J. Forrest found a nest of the Dunlin containing four eggs at Whitsuntide, on a moor in Upper Airedale. Mr. Sam Clough carefully counted 375 Rooks' nests in the Steeton rookeries on April 14th, 1918.* A curious fact, Mr. Clough informs me, is that none of his Rooks appear to have attempted to nest again after completing the first clutch of eggs. The Hawfinch has been added to the list of birds nesting in the Hebden Bridge district (W. Greaves). Black Game (mostly, if not solely, descendants of birds introduced many years ago) are increasing considerably in extreme Upper Wharfedale, and Mr. Cheetham informs me that they are now quite common close to Semmerwater. Tree Sparrows have been noted near Sheffield (*The Naturalist*, 1918, p. 26), and two rare ducks (the Ferruginous and a male Gadwall) are reported from Upper Nidderdale (*The Naturalist*, 1918, p. 231). A female Goosander was shot, and five others seen, by Mr. R. Ellam, on Ailsden reservoir, on January 2nd, 1918 (R. Butterfield). A Leach's Fork-tailed Petrel, in good condition, but dead, was picked up near to the

* This agrees with his report in *The Naturalist*, 1918, pp. 237-8, viz., the contents of 359 nests were taken, and less than 30 nests left, owing to dangerous positions.

river Aire, at Snaygill, near Skipton, on October 8th, 1918 (*Yorkshire Weekly Post*, October 19th, 1918). A Puffin was caught at Denholme on December 7th, 1917 (*The Naturalist*, 1918, p. 32). A white Yellow Wagtail (*M. raii*), a bird of the year, was seen throughout the summer in fields by the river, near Steeton and Silsden (Crosshills Naturalists' Society), and Mr. R. Butterfield reports seeing a white Chaffinch, 'a very pure example,' near Silsden, in June.

East Riding.—Mr. E. W. Wade reports :—1918 has been on the whole a favourable season for the birds. A fairly severe winter, not unduly prolonged, was followed by a cold wet April and a dry May and June. The Fieldfares, conspicuous by their absence throughout the winter, appeared in Mid-February, and stayed till the end of April. The Grey Crow was again very scarce, but reports from the battlefields of France indicate that the bird has found more attractive winter quarters. Woodcock commenced their return migration in January, appearing at Burton Constable as usual. Rooks commenced building during the last week in February, and were very numerous and prolific. Carrion Crows and Magpies were early and laying full clutches. Our Blackbirds and Thrushes have quite recovered from the winter of 1916-1917, and the former are more numerous than ever. The exceptional numbers of Mice and Field Voles produced the usual fecundity among the Owls. Clutches of five and seven of Brown Owls were observed and of six of Long-eared Owls, though the date of laying was late. The Brown Owl has entirely displaced the Long-eared Owl on the Wolds as a breeding species, and threatens to become too numerous. The Barn Owl has not done so well. A brood of young flew from the nest on 24th September. The Pewits have not recovered from the effects of the winter of 1916-1917. The laying date was late, and the intensive cultivation on the Wolds has very much upset them, the fallows being ploughed and harrowed before they had time to hatch off their young. A severe snowstorm on 18th April drove many birds from their nests and many former haunts remain untenanted. Snipe were unusually numerous. Migrants arrived at about the same date as last year and in full numbers. The Swifts, however, were late in arriving and early in departing, disappearing well before the end of August, except for a few stragglers on the coast, which lingered on till the end of September. All the migrants had a successful breeding season and departed in good time. There has been a noticeable increase in the numbers of breeding Finches. Grey Linnets were especially abundant and apparently all double brooded. Goldfinches again show a marked increase. The Lesser Redpoll has appeared in districts where it has not been previously observed. Whinchats have been more numerous than for many years. Two pair of Woodwrens have again bred in the district. Swallows and Martins have had a successful year, though the former were laying small clutches. The Goldcrest has disappeared as a breeding species, formerly frequent, and only a few have been observed on migration. The Corncrake lingers here and there, just enough to remind us of its existence. Turtle Doves have been more numerous than for many years. Partridges generally have done well, though there has been some disease on the carr lands and Holderness clays where the birds are patchy. Some exceptionally large coveys are about. The numbers of Pheasants have shown a steady decline since war conditions set in. The Stone Curlew arrived on the Wolds on 21st April (the usual date), but shows no increase in numbers—rather the contrary. The Pink-footed Geese arrived on 19th September, and the numbers are unusually large. The Tufted Duck, which was extending its breeding range in the Riding up to two years ago, has almost entirely disappeared. Last November, many Little Auks were seen off the coast. On May 16th and 17th five Black-tailed Godwits were seen at Hornsea, attended by some small Sandpipers (unidentified). The latter occasionally perched on the backs of the Godwits whilst the latter were feeding in shallow water. I can find no justification for the statement that the

plague of insects this year was caused or intensified by the scarcity of insectivorous birds. With the exception of the Starling, which has not yet recovered from the epidemic of some years ago, all the insectivorous birds were numerous, the Spotted Fly-catcher especially so. Yet there was a perfect plague of caterpillars in the gardens and the oak trees were again stripped in many places, and wasps were particularly numerous and destructive.

North Riding.—Mr. W. J. Clarke writes:—With the exception of Blackbirds, all the Thrushes have been scarce throughout 1918, not yet having recovered from the havoc wrought in their numbers by the severe winter of 1916-17. Whinchats are reported as scarce in some districts, but in others they have been more numerous than usual. Stonechats have become scarcer, and in one breeding district are reported to have disappeared altogether. Golden Crested Wrens have also been much less abundant than usual. Tits have remained normal, with the exception of the Long-tailed Tit, which has not been seen in quite the usual numbers. Goldfinches are increasing throughout the district, although the bird catchers still take toll of them everywhere. Landrails have been again more numerous than for some years past, and in one district are described as being abundant during the past summer. Turtle Doves have also been more common this year; this species seems to be extending its range throughout the district and becoming steadily more abundant. Little Grebes have revisited an old breeding haunt long deserted, and at least three broods were reared this year. Woodcocks seem to be increasing as a breeding species every year, and many nests have been found during 1918. Green Sandpipers are reported from two localities. Among the ducks, Shoveler and Garganey, Pochard, Wigeon and Tufted have been noticed, and several pairs of Teal have nested. The stormy weather during December, 1917, brought Glaucous Gulls in unusual numbers, mostly immature, but including several fine adults. These remained about the coast until March 2nd. Lesser Black Backed Gulls passed in numbers, all immature birds, on August 29th. This species does not appear to have visited its nesting-place at Kettleness for several years past. A Great Northern Diver remained about the coast from December 11th, 1917, to January 23rd, 1918. It fed chiefly upon small crabs and seldom brought up a fish. Shags, which are now annual winter visitors to the coast in small numbers, remained this year until May 6th—an unusually late date. The recorder has to acknowledge with thanks the receipt of notes from Messrs. T. N. Roberts, and F. Snowdon, which have been of use in compiling this report.

York District.—Mr. W. Hewett writes:—My thanks are due to Dr. C. A. Lower, Elvington, near York, and to Mr. J. F. Musham, Selby, for notes which have been of use in compiling this report.

Arrival of Spring migrants:—

SWALLOW.—April 24th, Kexby; April 27th, Hammerton; April 28th, Elvington.

HOUSE MARTIN.—April 28th, Stamford Bridge. Dr. Lower informs me that both the Swallow and House Martin have been common at Elvington.

SAND MARTIN.—April 28th, Stamford Bridge.

COMMON SWIFT.—May 5th, Gate-Helmsley; May 6th, Elvington; August 19th, last seen at Selby.

CUCKOO.—April 20th, Hammerton; April 29th, York; May 1st, Elvington; May 3rd, Selby; June 30th, egg of Cuckoo (of Skylark type) found in Hedge-Sparrow's nest which contained three eggs, at Kellfield, near York.

LANDRAIL.—May 7th, York; May 8th, Elvington. I have found this species in many localities near York during this summer, and believe it to have been of more frequent occurrence than usual.

WILLOW-WARBLER.—April 23rd, Elvington.

REDSHANK.—As numerous as ever in several localities near York; commenced laying on April 11th; two nests, with five eggs in each, seen on May 6th.

BLACK-HEADED GULL.—A large number assembled on Skipwith Common in April and commenced laying about May 10th.

CURLEW.—A pair frequented Skipwith Common during the whole of May, but so far as could be ascertained did not nest. This species nested in the locality in 1901.

HAWFINCH.—An immature specimen was caught by a Gamekeeper at Hammerton on July 26th.

TURTLE-DOVE.—This species has been noted from many localities this season and is gradually extending its range.

PARTRIDGE.—The past season has been a favourable one for this species in the York neighbourhood. Coveys of eleven and twelve have frequently been noticed.

At 1 a.m., on the 17th March, great numbers of birds calling from the sky, evidently a phase of spring migration. The species seemd to consist of REDWING, FIELDFARE, STARLING and SKYLARK.

FORK-TAILED PETREL.—A specimen was picked up by a cat at Clifton, York, on October 28th, 1917.

Dr. Lower informs me that, at Elvington, Ducks were much scarcer on the Derwent during last winter and no rare species were observed; that the

HOODED CROW came in very small numbers and did not stay long; and that the

FIELDFARE was abundant and stayed until May.

WOODCOCK.—A specimen was observed drinking in the yard behind his house at Selby, by Mr. Musham, on the morning of December 25th, 1917.

Wild Birds and Eggs Protection Committee.—Mr. Johnson Wilkinson writes :—

Spurn.—We have not been able to do any protecting during the past year. Mr. Lemon, Hon. Sec. to the Royal Society for the Protection of Birds called upon the Sec. of Trinity House, who promised to bring the matter before the Elder Brethren, with the result that they could not allow any keeper or man from the Lighthouse to assist, so the birds had to take their chance. Mr. Wade has done everything he possibly could with the Humber Headquarters. The C. O. would give a permit to a watcher, but the Trinity House stands in the way.

Bempton.—Two young Falcons got safely away. The Climbers did not approach the nest until April, when two eggs were found. The part of the Cliff where the eggs were found was carefully protected and not disturbed until the young birds had flown. A report from the *Yorkshire Post* complaining of shooting along the cliffs from an aeroplane, in consequence of which large numbers of eggs were destroyed, was entered into at once and complaint made to the proper authorities. A reply was received that the shooting had not been done by any pilot from Hornsea Mere, but there were other units of the R.A.F. who have machines fitted with Machine Guns. The matter was then brought before all the Officers, with a satisfactory result.

North Yorkshire.—I am given to understand three eggs were laid, but only one young Falcon got away. Unfortunately we have not been able to pay proper attention to this part of Yorkshire. Corncrakes have been very numerous in this District.

Hornsea Mere.—The Mere has been taken over entirely by the Military this Season, all pleasure boats being taken off and no one allowed on the

Mere. I heard, however, that the aeroplanes did not do nearly so much harm as the boats, the breeding places having never been disturbed. The Pochard, Great-crested Grebes and Shovelers had been above the average; Sedge and Reed Warblers were more numerous than before. No Bearded Tits have been seen. Our Watcher says he has not seen so many Grebes for many years, also that many Wild Geese visited the Mere in the Winter months, but soon passed on.

Stone Curlews.—Unfortunately not so many nests as usual this year, no doubt accounted for by the scarcity of watchers. Several birds, however, have been seen.

Black-Headed Gulls.—On November 5th, 1917, I again wrote the Controller of Food and reminded him of my letter of last year, and pointed out the necessity of an early reply so that arrangements might be made for taking sea-birds' eggs for the whole of the country. I received the usual reply 'Have received yours, and having attention'; nothing further heard on the matter. Mr. Claude Thompson kindly gave the eggs at Skipwith to us on the same terms as last year. Unfortunately the number of birds did not turn up as usual, and we only got 471 eggs. These were sold retail at 1d. each; at the same time they were being sold in Leadenhall Market at 7d. each. Two other smaller Yorkshire Colonies have not done so well this year; from one Colony large numbers of eggs were stolen.

Protection.—Complaints have been made about Nightingale and Grasshopper Warbler eggs having been taken in Yorkshire; the matter has been brought before both owners of property and police.

Finance.—Having a balance in hand I deemed it not necessary to ask for any subscriptions. Our expenses have been £11, leaving a balance still in hand of £11 10s. 9d. The accounts have been duly audited by Mr. W. E. L. Wattam.

Mammals, Amphibians, Reptiles and Fishes.—Mr. J. F. Musham writes:—At Selby, on November 19th, 1917, a Stoat was shot by Mr. Beasley in the act of dragging away a stale dead fowl; a penchant for carrion is rather unusual in this species. On February 22nd last, at 9-30 p.m. small frogs were numerous on the pavement in Bondgate, Selby.

Mr. H. B. Booth writes that the North American Grey Squirrels, liberated at 'Upwood,' near Bingley (the residence of the late Mr. Geo. Mitchell) four years ago, are now considerably increasing, and at least one has made its way across the moors into the adjoining valley of the Wharfe.

Mr. E. W. Wade writes:—It has been a great year for Mice here (North Ferriby). Woodmice and House-mice very common; Short-tailed Field Voles and Bank Voles numerous and destructive. I have been trapping and destroying them ever since January, and still they come; have hardly seen the Common Shrew which we generally have around here. Badgers are still on the increase in our Dales, in spite of the efforts of keepers to reduce their numbers.

Mr. W. Hewett reports a female Badger caught during April in Sand Hutton Wood.

Mr. W. J. Clarke, Scarborough, reports that an Albino Hedgehog, about half grown, was taken at Seamer (alive) in October, 1917. Also the capture of a Basse measuring sixteen inches in length, off the East Pier, Scarborough, on February 15th, 1918. Also the capture of a Lesser Forkbeard or Tadpole Hake, at Scarborough, on July 24th, 1918.

Marine Biology Committee.—Dr. John Irving writes:—This Committee has been unable to arrange a meeting at the Coast for Scientific investigation. This autumn, attempts have been made to collect, and bleach to whiteness, the so-called Carrageen Moss—two allied sea-weeds, *Chondrus crispus* and *Gigartina mamilliosa*, which abound on the Yorkshire

Coast. The Food Production Department is anxious to secure this for the preparation of jellies in connection with Red Cross Hospital invalid diet, as a substitute for Isinglass and Gelatine. Collecting parties have been organised at Whitby and Sandsend by Mr. J. T. Sewell, J.P.; at Scarborough and Carnelian Bay by the writer; and at Filey by Canon Cooper. Thus the energies of the Marine Biology Committee are diverted for the time being.

CONCHOLOGICAL SECTION.

Mr. J. F. Musham writes :—At our meeting at Market Weighton, on the 15th June last, Messrs. J. A. Hargreaves, Greevz Fysher and I renewed acquaintance with many of our local commoner forms, *vide The Naturalist* for August, page 264. Reference may be made to *Hyalinia lucida* in copula, at 9-30 a.m., in my garden, Brook Street, Selby; a small colony of this local mollusc eking out an existence here for some time back. On August 10th, a second large specimen of *Limax flavus* var. *breckworthiana* was secured in a garden near by, the first being taken in September of 1917.

ENTOMOLOGICAL SECTION.

Lepidoptera.—Mr. B. Morley writes :—An unusual swarm of *Tortrix viridana* larvæ caused a defoliation of the oaks in many woods during June, and it is reported that the cabbage crop has been destroyed in North Yorkshire by the larvæ resulting from the autumn brood of *Pieris rapæ*. *Polyommatus phlaeas* appeared commonly in June, but in August it abounded in most parts of the county, in many unusual places, sometimes flying in considerable numbers in streets of the villages. In June, Mr. Rosse Butterfield took *Argynnis euphrosyne* and *Coremia munitata* at Barden, in Wharfedale. Mr. T. Ashton Lofthouse has taken *Peronea mixtana*, *Clepsis rusticana* and *Phoxopteryx unguicella* on the Cleveland Hills, the latter being new to the local list; in the same district and at Skelmanthorpe, *Stigmonota regiana* and *Amphisa gervingana* have occurred, and on the Eston moors *Elachista kilmunella* was common in August. *Cerostoma sequella* was in great abundance in July on Sycamore trunks in a restricted area at Skelmanthorpe, and in all the woods around the same place, where the Wild Hyacinth grows freely, the little known *Sciaphila sinuana* was taken freely in July, and Mr. G. T. Porritt believes he found the larvæ of this species commonly in two different woods near Huddersfield. At Huddersfield also, he has taken a specimen of *Acronycta megacephala*, a rare species there, and at the same place the larvæ of *Cucullia verbasci* have been found for the first time, and a specimen of *Plusia moneta* has also been taken, which is a new record for West Yorkshire. *Nemeophila plantaginis* was plentiful on the West Riding Moors in June, and in a few lowland localities also. During recent years this species has been rarely seen in the Riding. In August I saw *Argynnis paphia* in a wood near Skelmanthorpe, and Mr. J. Hooper confirmed the record by taking one in the same place the following day. This, with the taking of *Chaerocampa elpencr* larvæ, are new to the local list. Mr. H. Lodge took a specimen of *Cymatophora fluctuosa* near Wakefield in June, and in September, at Skelmanthorpe, Mr. T. H. Fisher procured a specimen of *Sphinx convolvuli*, at which place, also, a few examples of *Zeuzera pyri* were obtained in August. It is worthy of note that the type form of *Amphidasys betularia* still lingers on in the West Riding, two specimens being taken in June, one at Hebden Bridge, and the other at Skelmanthorpe.

Coleoptera.—Dr. W. J. Fordham writes :—In spite of a more or less unfavourable season, a fair amount of work has been done in this order. *Molorchus minor* has turned up in the East Riding, undoubtedly native, thus further extending its known range in a northerly direction. There are also a few more County Records and many interesting Vice-County

Records, a detailed list of which will probably appear later in *The Naturalist*.

Neuroptera and Trichoptera.—Mr. G. T. Porritt reports:—There is very little to report on these insects. The only species of any interest was *Coniopteryx aleyrodiformis*, which occurred in woods near Huddersfield in June, not uncommonly, but had only previously been recorded in Yorkshire from the Cleveland district. *Chrysopa tenella*, after an apparent scarcity for some years, appeared in plenty again in the Huddersfield district. *Limnophilus hirsutus*, which occurred at Kirkheaton, Huddersfield has not previously been recorded for that district.

Hymenoptera, Diptera and Hemiptera.—Mr. J. F. Musham writes:—In *Bombus*, a black male of *hortorum*, var. *harrisellus* occurred at Hemingborough, E. R. Examples of the autumn brood of *Andrena gwynana*, *Nomada bifida* and *alternata*; *Halictus morio*, *smeathmanellus* and *nitidiusculus*; *Pemphredon lethifer* and *shuckardi*, together with *Passaloecus insignis* and *Prosopis hyalinata* were frequent at Selby, the latter I believe, new to Yorkshire. *Crabro chrysostomus* nesting in dead Ash stump, was netted with its prey, a large syrphid dipteran. *Odynerus trimarginatus* nested in the end of a tall cane used for supporting runner beans; a split section revealed a series of chambers, each closed with an earthen partition, and provisioned with eight or nine small green lepidopterous larvæ.

Mr. Rosse Butterfield, Keighley, writes:—I have found several nests of *Myrmica rubra*, race *lobicornis* at Grassington and Keighley; in the spring I found several specimens of *Formicoxenus nitidulus* in nests of *Formica rufa* near Hebden Bridge; I believe this little guest-ant has not been found elsewhere in Yorkshire except at Scarborough. In the genus *Sphecodes*, amongst the additions are *S. pilifrons*, *S. variegatus* and *S. hyalinatus* from Keighley district.

FOSSORES.—*Pompilus nigerrimus* Scop., from near Barden, and *P. pectinipes*, Keighley, are both new.

The extremely rare *Asiatus stigma* Panz. occurred to Dr. W. J. Fordham on August 12th, 1917, in a sandy field on Brayton Barff (*vide The Naturalist*, June 18th, page 188).

On our August excursion to the Settle district, Mr. Chris. A. Cheetham captured males of *Nomada solidaginis* at Keasden.

ICHNEUMONS AND SAWFLIES.—Mr. Butterfield reports a number of additions from Upper Airedale. Dr. Fordham has also added to his local captures. Pine wood from Helmsley, sawn up at Selby, was responsible for an invasion of *Sirex gigas* in the town. Dr. Fordham reports a female of *Sirex noctilio* taken in a fir wood at Aughton, E.R., on a felled log; *S. gigas* was taken here on several occasions; there can be no question of introduction.

Diptera.—Mr. Butterfield reports *Microdon mutabilis* L., *Ceratopogon myrmecophilus* Egg., from pupa found in nests of *Formica fusca* at Grassington; both these are interesting additions to the north.

Mr. Cheetham has also added three new County records in this section, and Mr. Fordham has done good work. Dr. Fordham found *Anopheles maculipennis* Mq. in Selby. It is well to refer to this fact since the Local Government Board are specially requiring information about mosquitoes. Mr. Butterfield also got an *Anopheles* sp. in Keighley.

Arachnida.—Mr. Wm. Falconer writes:—During the year two species of spiders have been added to the county list, viz., *Xysticus ulmi* Hahn. from Martin Beck Wood, two females (Dr. Corbett), previously erroneously reported for Yorkshire in Blackwall's 'Spiders of Great Britain and Ireland,' (1861-64), and one new to science, provisionally named *Maro humicola*, Slaithwaite, both V.C. 63. Dr. Harrison, in his 'Notes on the Spiders of North Yorkshire,' *The Naturalist*, October, p. 316-7, gives three species new to V.C. 62, *Oxyptila praticola* C. L. K., *Epeira triguttata* Fabr. (? *sturmii* Hahn.), *E. cucurbitina* Clerck., and four new to V.C. 65,

Hilaira uncata Camb., *Maso sundevallii* Westr., *Ceratinella brevis* Wid., and *Lycosa lugubris* Walck., none, however, uncommon. A list of 'The Spiders of Yorkshire' has commenced serial publication in *The Naturalist*, and several gall mites, to which may now be added seven more species, were recorded in 'The Galls of the Huddersfield District,' in the May issue. Useful work has again been done in investigating the *Acarids* of the County and it is proposed in due course to collate the records for publication, as has already been done in the other orders of Arachnida.

BOTANICAL SECTION.

Flowering Plants.—Mr. C. A. Cheetham and Mr. J. F. Robinson write:—It is pleasant to report that, alike by detached workers and by the collective efforts of affiliated societies, good observational and other work has been accomplished along botanical lines. The societies have not been idle, for one learns that generally the past year has afforded very good seasons for the prosecution of plant study (classification and geography), and many excursions, besides those of our Union, have been made into the wilds—where such can still be found. Such unusuals as *Actaea spicata*, *Thlaspi alpestre*, *Viola lutea*, *Spiranthes spiralis*, etc., have been seen again in their old West Riding stations. In the East Riding reports show that sedges like *Carex axillaris*, *C. pseudo-cyperus* and *C. paradoxa* have again luxuriated in stations that were new to V.C. 61 less than five years ago. Moreover, so recently as the 13th of September, one of our younger local botanists discovered in one of the fen patches of heather (Calluna), to be found in the East Derwentland Division, some bushes of *Erica mediterranea*, which, so far as we can yet gather, has hitherto been recorded only for Ireland. The origin of this species on the Great Sand Field near Holme-on-Spalding Moor is still *sub judice*.

Several useful articles have appeared in *The Naturalist*.

Utricularia intermedia Hayne is added to the Yorkshire list by Mr. H. J. Wilkinson, being found by Corporal A. Templeman on Strensall Common.

Mr. W. Ingham reports *Typha angustifolia* L. with *Hypericum elodes* L. in a small marsh at Naburn; also *Genista tinctoria* at Flaxton and Bolton Percy.

Dr. F. A. Lees reports an addition to our West Yorkshire Flora from the Bentham-Ingleton district, viz., *Juncus tenuis* Wills., found by Mr. A. Wilson, who also found a new station for *Malaxis paludosa* at Fostrow Fell. Dr. Lees states that our prevailing form of *Hypericum quadrangulum* L. is *H. lineolatum* and adds *Helleborine purpurata* Druce as a West Yorkshire species, and also gives many interesting notes on alien species.

The very mild weather at the end of January brought the early spring flowering plants along in good time. Up on the limestone scars at the head of Crummockdale, alt. 1,100 ft., *Daphne Mezereum* L. was in full flower on February 23rd, and *Saxifraga oppositifolia* L. was just opening at the same time. Celandines were in full flower in Ribblesdale on March 3rd. May was very fine and hot, and the Globe flower was almost over by the 24th, on Helwith Moss. Most of the trees have had an average crop of fruit, the oak, however, is reported as failing in many districts (Scarborough, Parlington Park). The pear crop is a failure after the abnormal effort of last year.

Botanical Survey Committee.—Mr. W. H. Burrell writes:—During the year Miss Elsie D. Whitaker has made known her discovery of Pine stools in quantity near the base of the peat on the Whitby and Scarborough moors, in Harwood Dale bog, Foulisike bog and near the Flask Inn. Many cones were seen, some with seeds, and microscopic examination revealed pine pollen as a constant and abundant constituent of the lower peat. The survey of Martin Beck shows progress in Mr. M. H. Stiles' report on the Diatom flora published in a recent number of *The Naturalist*. The joint visit of the Union and the British Ecological Society to the moors

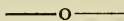
around Huddersfield and Settle, in August, should stimulate interest in Vegetation Survey.

Bryology.—Mr. W. Ingham, B.A., writes:—Since the last report the Bryological Committee has lost one of its oldest and most valued members in Matthew B. Slater. The section has been represented at all the Union's excursions and some interesting plants have been seen and reported, such as *Tetraplodon Wormskjoldii* Lindb., at Widdy Bank, and *Dicranum undulatum* Ehrh., at Market Weighton. Mr. W. Ingham reports the following:—*Sphagnum fimbriatum* var. *intermedium* forma *densum* (Strensall Common, first British record); var. *laxifolium* (Arncliffe Wood); *S. Girgensohnii* var. *stachyodes* (Wheeldale Beck); *S. compactum* var. *isophylla* (Sandburn Wood, near York); and *S. auriculatum* var. *tenellum* (moor above Ravenscar, first British record. Mr. Burrell rediscovered the very rare Hepatic *Scapania Bartlingii* in Bolton Woods.

Mycology.—Mr. A. E. Peck writes:—The Fungus Foray of the year was held at Selby from September 7th to September 12th, being a joint meeting with the British Mycological Society. A report will probably appear in *The Naturalist*. At this meeting Messrs. Wm. Bellerby (York) and F. A. Mason (Leeds) were elected to the Mycological Committee of the Union, and Messrs. R. Fowler Jones, Thos. Smith and A. E. Peck were elected members of the British Mycological Society. The majority of our Committee are now members of the B.M.S., and our Chairman, Dr. Wager, has been elected its President for the ensuing year.

GEOLOGICAL SECTION.

Mr. John Holmes reports:—The section has been officially represented at three of the summer excursions. At Market Weighton a portion of the Wold Country was explored. The Crosshills excursion extended our knowledge of the beds exposed by the Lothersdale anticlinal. Members of the section attended the joint excursion with the British Ecological Society and explained the geology of the places visited. The fossiliferous shales in the Millstone Grit of Keasden Beck also received attention.



British Association.—Mr. T. Sheppard, M.Sc., reports:—I had the honour of representing the Yorkshire Naturalists' Union at the Conference of Delegates of the British Association in London, in July, and took part in a discussion on popularising the work of our scientific societies. A report of the Conference appeared in *The Naturalist* for August, pp. 247-248.

Soppitt Memorial Library.—The following contributions have been received during the year:—Transactions of the North Staffordshire Field Club, Vol. LII., with Annual Report for 1917-18; Annual Report of the Huddersfield Naturalist, Photographic and Antiquarian Society, 1917-18. The Improvement of Hill Pasture, by Dr. W. G. Smith, and Pitty Hollow, Wirksworth, a Botanical Study, by Mr. Thomas Gibbs.

The Naturalist has been regularly published, and its high standard of excellence maintained. This is particularly satisfactory, seeing that so many scientific journals have ceased publication on account of the present conditions. The thanks of the Union are given to Mr. Thomas Sheppard, M.Sc., for supplying the blocks in illustration of some of his various contributions entirely free of cost.

The Presidency has been offered to and accepted by Dr. W. G. Smith, B.Sc. The Union wishes to record its indebtedness to the retiring President, Prof. W. Garstang, M.A., D.Sc., F.Z.S.

Financial Statement.—The following is the Hon. Treasurer's (Mr. Edwin Hawkesworth) Statement of Receipts and Payments:—

Naturalist,

STATEMENT OF INCOME AND EXPENDITURE, 12 months to November 26, 1918.

INCOME.		£	s.	d.	£	s.	d.
Members' Annual Subscriptions, arrears		7	13	6			
" 1918		65	7	6			
" 1919		1	2	6			
					74	3	6
Life Members' Subscriptions (<i>contra</i>)					14	14	0
Levies from Associated Societies, arrears		0	18	9			
" 1918		7	9	7			
					8	8	4
NATURALIST' :—							
Subscriptions, arrears		9	12	0			
" 1918		81	7	0			
" 1919		1	10	0			
					92	9	0
Sales of 'Transactions'						0	2
Bank Interest					3	4	1
Balance, being excess of Expenditure over Income					22	19	0
					£216	0	5

EXPENDITURE.		£	s.	d.	£	s.	d.
Expenses of Meetings		7	3	8			
Printing and Stationery (General A/c)		24	9	6			
Postages, etc. (Hon. Secretaries A/c)		10	2	10			
Clerkage,		10	0	0			
Printing, Stationery (Hon. Treas. A/c)		2	5	9			
Postages, etc.		1	11	3			
Bank Commission		0	4	8			
PUBLICATIONS :—							
Annual Report, 1917		10	19	6			
" (est.) 1918		14	0	0			
		24	19	6			
Less—Provisions in A/cs for 1917		9	0	0			
					15	19	6
NATURALIST' :—							
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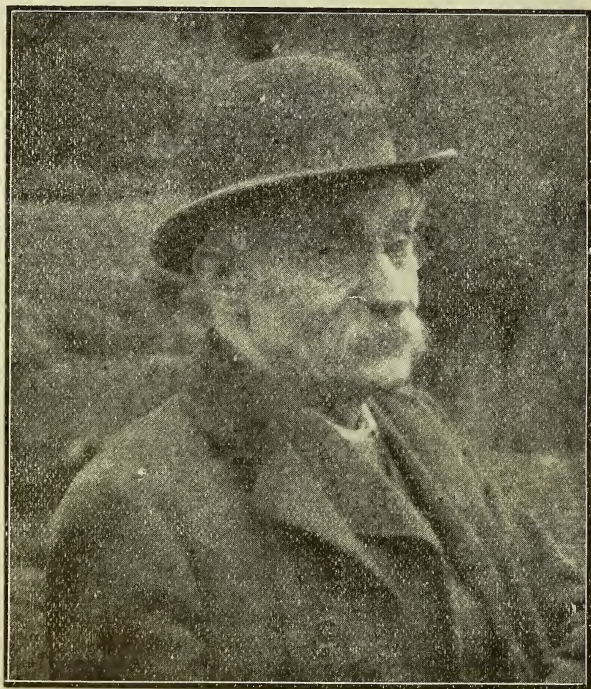
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Hon. Treasurer.

In Memoriam.

RICHARD BARNES.

Yorkshire bryologists have had many losses of late years and death has now removed another link with the great workers of a past generation. Richard Barnes was the son of Thomas Barnes, of The Nurseries, Thirsk, and was born



August 6th, 1851. His interest in botanical pursuits, as a youth was developed by rambles with the late William Foggitt.

After a five years' apprenticeship with his father, he went to the Royal Gardens, through the influence of Mr. J. G. Baker, spending one year at the Horticultural Gardens, Chiswick, and two years at Kew. The result of his work would have secured him recommendation for an appointment from there but he thought it his duty to return to Thirsk. At his father's death he obtained an appointment as Curator at the Saltburn Gardens, a post he retained for sixteen years; he then established a business at Harrogate, where he spent the remainder of his life.

It was at Kew that his attention was first directed to the

study of bryology, by his friend and colleague, the late F. W. Burbidge, afterwards Curator of the Botanical Gardens, Dublin ; his interest and enthusiasm in this study never lagged, Prof. Denny, of Firth College, Sheffield, encouraged and helped him in the preparation of microscopic mounts, a work in which he attained extraordinary technique.

The extent of his field work is shown in the numerous localities investigated by him and cited by Dr. Braithwaite (whom he always spoke of as the old Doctor, and whose friendship he greatly valued), in the British Moss Flora ; by M. B. Slater, in the second edition of Baker's 'North Yorkshire,' and in lists of species in *The Naturalist* from Nidderdale, Cleveland, and other North Yorkshire and Durham districts. Among the most striking discoveries were *Bryum marattii* and *B. calophyllum* on Coatham marshes, and later *Barbula glauca* near Richmond, this having been previously detected only in Sussex. To the Bryological Section of the Union his death is a great loss ; to the younger generation his knowledge of minute mosses and hepatics in the field was a constant wonder, and his enthusiasm over fresh discoveries quite infectious ; when microscopes were brought out and his mounts exhibited it seemed hardly credible that such minute and fine work and dissections could have been done by any but the delicate fingers of youth, at this work he was unequalled ; he made a very careful study and had a wide knowledge of the peristomes of mosses, especially the genus *Bryum*. This work of his should be a national possession available for bryologists in the future. It is not given to many to form such warm friendships as Barnes did, the younger generation loved him and looked on him as a father on bryological rambles ; his leadership at the proposed meeting next July, at Pateley Bridge, a district with which he had an intimate acquaintance, will be sadly missed.

He died at Harrogate, on November 7th, from heart failure, following the premature report of the armistice. He was buried at Harlow Cemetery, the Bryological Section being represented by Mr. W. H. Burrell, of Leeds.—C.A.C.

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Dr. R. F. Scharff has an interesting article on 'The Irish Red Deer,' in *The Irish Naturalist* for October-November. In the same issue Mr. R. L. Praeger writes on 'Derc-Ferna, the Cave of Dunmore.'

Part IX. of Annie C. Jackson's paper on 'The Moults and Sequences of Plumages of the British Birds' appears in *British Birds* for December ; there is the Report on 'Recovery of marked Birds,' and the usual crop of suspicious aliens from Sussex.

The New Phytologist for 'October and November' contains a paper 'On the Nature of Fertilization and Sex,' by W. N. Jones ; three notes on 'The Reconstruction of Elementary Botanical Teaching,' by J. Small, M. C. Rayner and M. C. Stopes ; and 'The Origin and Development of the Compositæ,' Chapter IX. ; 'Fruit Dispersal,' by J. Small.

ENTOMOLOGY.

Lancashire and Cheshire Entomology.—At a recent meeting of the Lancashire and Cheshire Entomological Society, Mr. W. Mansbridge brought his series of *Peronea cristana* comprising most of the named forms and some un-named. He also showed the varieties bred this season, these including varieties *nigrana*, *leucopheana*, *radiana*, *divisana*, *centro-villara* and *autumnana*, and stated that *nigrana* was the most frequent, the others being only of rare occurrence. Mr. W. A. Tyerman showed bred series of *Hyponomeuta euonymellus* and captured *Semioscopus phryganella* from localities in the Liverpool district. Mr. S. P. Doudney, *Odontopera bidentata* from Rainhill and Delamere, also the race of *Liparis similis* with brown anal tuft, from Huyton. Mr. H. M. Hallett exhibited the pentatomid bug, *Acanthosoma haemorrhoidalis*, usually considered to be attached to the birch, but these had been captured a long way from the nearest birch. Mr. R. Wilding had a large number of Coleoptera from Cartmel, and called attention to the following as being new to the Lancashire and Cheshire list, viz.:—*Philonthus lucens*, *Silpha nigrita* and *Scaphidium 4-maculatum*; he further included in his exhibit a very fine series of varieties of *Rhagium bifasciatum* from the same locality.—W. MANSBRIDGE, Hon. Sec.

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BOTANY.

Goodyera repens near Carlisle.—For the last two years I have been aware of a station for this charming little Orchid within four miles of this city, where the plant is so flourishing that it must have been established there for a long time. The habitat is the usual one for the species—a plantation of Scots pine, and although there is a school within a stone's throw, and the plantation is more or less open to the footpath which borders it, numerous other interesting plants such as *Pyrola minor*, *Sanicula europaea*, *Erythraea*, *Centaureum*, etc., contrive to flourish. A greater danger to the station lies in the fact that the plantation consists of splendidly grown trees, ready for the axe, which in these days is showing so little mercy to our woodlands, and whether the Orchid would survive the destruction of its natural association with the pine is perhaps open to doubt. On the other side of the footpath is another plantation but consisting of birch and a little oak, and *G. repens* is not present there. *G. repens* is not mentioned by Hodgson in the 'Flora of Cumberland,' although in Baker's 'Flora of the English Lake District,' published thirteen years earlier, it is recorded from Armthwaite, which is, of course, in Cumberland, and I know it has been found there again within the last few years, and also at Corby, another station in the Eden valley.—F. H. DAY, Carlisle, November 24th, 1918.

CORRESPONDENCE.

THE CAUSES OF VARIETIES IN BUTTERFLIES.

IN reply to Mr. Porritt (*The Naturalist*, p. 359, 1918), it seemed to me far more likely that the caterpillars of those *P. phlaeas* fed comparatively near to each other (in Devon or Cornwall, the field being near the county boundary) than that they fed in localities wide apart (such as one in the above counties, the other in the north or east of England or in the mainland of Europe). If the former, I do not see that climatic conditions and temperature would cause the difference in coloration. On the other hand, is there any scientific objection to the view that in Britain in this species dark varieties are the results of the caterpillar feeding mostly on one plant, and light varieties the result of feeding mostly on another plant? The average normal coloration can be explained as being the result of a mixed food supply on several plants, in which those mentioned in the former sentence would counteract each other. If climatic conditions (temperature, etc.) cause *all* the varieties in butterflies and moths (as sometimes claimed), how is it that some species do not vary much, while others seem to vary in most countries, if not all? For instance, Mr. J. H. Leech, 'On the Lepidoptera of Japan and Corea,' *Proc. Zool. Soc.*, 1887, states that *P. phlaeas* is 'an extremely variable species both in size and colour and markings; during the summer the typical form gives way entirely to var. *eleus*; a few intermediate forms occur' (p. 414), 'darker in some localities than in others.' It seems to me exceedingly difficult to believe that climatic conditions of those parts are completely responsible for these differences just stated. *Vanessa c-album* is also stated 'as variable in Japan as in Europe' (p. 420). So far as I am aware, the climatic conditions of Japan are *not exactly* like those of England or South of France; but in these two latter localities, the species varies considerably in the same summer. On the other hand, *Vanessa io* 'does not vary in the least from European specimens' (p. 421). It seems to me that some species, as the first two, will vary *whatever* climatic conditions they are exposed to. Take again *Colias edusa*, and its variety *helice*. It seems a complete impossibility for the climatic conditions of Devon to form the coloration of the typical specimens and at the same time that of the variety, which flies side by side with the others, as I found in 1892-3. Only one *helice* was seen (and caught), whereas the typical coloration was very plentiful. Now if the climatic conditions picked out that one specimen why did they not also pick out the others? Here again it seems reasonable to think that this variety is due to the caterpillars feeding mostly on one plant. According to Leech, besides the typical form of *Colias hyale* in Japan, there are also four varieties 'all together in one spot' (p. 409). I find it impossible to believe that all these are the result of climatic conditions.—F. D. WELCH.

EVERYONE who has bred lepidoptera at all extensively from the egg knows that the food-plant has no influence whatever on the imagines. The theory has been tested over and over again during the past fifty years by rearing separated lots of larvæ from the same batch of eggs, on totally different food-plants, without any result so far as variation is concerned. On the other hand, Mr. F. Merrifield, many years ago, proved conclusively that temperature has a great deal to do with variation; and the full details of his experiments may be read in the *Transactions of the Entomological Society of London*. But perhaps the most potent cause of variation is *Heredity*, either from the parents or from more remote ancestors. The former is so well-known that an experienced lepidopterist knows when pairing together the different forms of species, pretty well what the produce will be. Of the latter I had a striking instance last year. Several years ago, my strain of the variety *varleyata* of *Abraxas grossulariata* having run out, and not having reared any *varleyata* from wild larvæ that year, but having bred four or five wild specimens of the black-and-white form which is known

to produce *varleyata*, I paired a couple of them, with the result of getting twenty-five per cent. of *varleyata* in the next generation. The two forms I paired together for several years, but never got anything different from the two forms of the parents until last year, when a very striking asymmetrical specimen cropped out from one of the broods. In the specimen both the left forewings were similar to the black-and-white parent, but the right side forewings were of a totally different type of the moth, having an unusually broad yellow band outside the black median band in the upper wing, and in the hind wing the markings and distribution of the spots were also totally different. Nothing of the character had ever appeared in any of the large number of moths I had bred from the strain up to that time, although the deep yellow colour, etc., must have been inherent during the several years I had bred them, and I know not for how many years in the wild ancestors. Perhaps a still more striking instance occurred to Mr. L. W. Newman, of Bexley, in Kent. Mr. Newman, years ago, obtained from South-west Yorkshire a batch of eggs from a cross between the type of *A. grossulariata* and the var. *varleyata*, from which in the second generation he reared the usual Mendelian proportion of 25 per cent. of *varleyata*. These he bred together with the type specimens, but in a year or two entirely lost, as he believed, the strain. But, having no use for the many type specimens he bred from the strain, he had been in the habit of turning them out on to a *Euonymus* hedge close to the door of his house (a hedge I know well), and each spring collecting the larvæ from the hedge on the chance of breeding varieties. From them *five years afterwards*, but not in a single instance previously, he tells us, *varleyata* turned up in numbers! That they were the produce of the original Yorkshire moths there is no doubt, as this variety does not occur at all anywhere in that part of England.—G.T.P.

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In future *The Scottish Naturalist* is to appear bi-monthly, at 7/6 per annum.

Mr. N. Colgan writes on the Reproduction of *Helix aspersa* in *The Irish Naturalist* for December.

Mr. J. Ritchie has some 'Notes on the Food of some Wild Birds' in *The Scottish Naturalist* for November.

The annual subscription to the *Entomologist's Monthly Magazine* for 1919 is 9s., and to *The Entomologist* 12s.

Dr. A. Smith Woodward, of the Geological Department of the British Museum, has been awarded the Cuvier prize by the French Academy of Sciences.

An inspiring article on 'War and Peace,' in which the part played by science in connexion with the war is well drawn, appears in *Nature*, No. 2559.

We regret to learn of the death of Mrs. R. F. Scharff. She took a keen interest in *The Irish Naturalist*, and in 1916 issued an Author-Index to the twenty-five volumes then issued.

'Observations on the Local Variation of *Clausilia bidentata*,' by Prof. A. E. Boycott; and 'Field Notes on *Helicodonta obvolvata*,' by H. Beetson, appear in the *Journal of Conchology* for January.

Mr. J. F. Musham, Hon. Secretary of the Selby Scientific Society has been elected Vice-President of the Lincolnshire Naturalists' Union, 'a position carrying with it the Presidentship for 1920.'

Dr. W. E. Collinge has a paper in *The Scottish Naturalist* for December on 'The Distribution of Woodlice in Scotland'; and Mr. W. Denison Roebuck writes on 'The Mollusca Fauna of the Outer Hebrides. We notice that Dr. Collinge admits only those records which he has personally examined; a habit other writers are contracting, and which we hardly consider to be either scientifically desirable nor complimentary to previous workers, many of whom were quite reliable.

Naturalist.

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Contents :—

	PAGE
Notes and Comments: —A Wet Month; Terrestrial Acari; Yorkshire Specimens; An Entomological Contortionist; British Whales; Popularising Science; Leeds War Memorial; Fossil Earthquakes; Old River Channels; Earthquake Phenomena; 'Lurching'; 'Rock-Riders' in Cumberland; Sandstone Dykes; Age of Dykes; Durham Glacial Beds; Loess; A Yorkshire Comparison; Carboniferous of Yorkshire; Goniatite Zones...	49-56
Fossils of the Holderness Basement Clays (illustrated)— <i>Alfred Bell</i>	57-59
The Hearing Organs of Fishes (illustrated)— <i>Joseph Smith, M.R.I.A.</i>	60-62
The Apterygota of Yorkshire and Derbyshire (illustrated)— <i>James Meikle Brown, B.Sc., F.L.S., F.C.S.</i>	63-66
The Common Banded Snail: a Study in Variation — <i>A. E. Trueman, D.Sc., F.G.S.</i> ...	67-69
Notes on the Entomology of the Bubwith District — <i>W. J. Fordham, M.R.C.S., L.R.C.P., F.E.S.</i>	70-71
Common Wild Birds of the Scarborough District — <i>W. Gyngell</i>	72-74
In Memoriam: George Parkin (illustrated)— <i>E.G.B.</i>	75-76
Westmorland Coleoptera — <i>F. H. Day, F.E.S.</i>	77-79
Field Notes: —Moorhen Nesting in a Tree; Corncrake Calling whilst Perched in Hedge; Derbyshire Butterflies	79
Reviews and Book Notices	66
Northern News	59, 74, 80
News from the Magazines	62, 74, 80
Illustrations	57, 61, 63, 75

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NOTES AND COMMENTS.

A WET MONTH.

Nature informs us that 'According to the monthly weather report for September, issued by the Meteorological Office, the weather was abnormally wet over the British Isles generally. In the West Riding of Yorkshire and in Lincolnshire, where the records extend over a period of more than fifty years, it was not only the wettest September, but wetter than any calendar month of the year. In many places rain fell every day.'

TERRESTRIAL ACARI.

The Rev. J. E. Hull has favoured us with a reprint of the portion of his 'Terrestrial Acari of the Tyne Province' dealing with the Thrombidiidæ and Gamasidæ. This is a far more important contribution to our knowledge of our British Acari than its local title suggests, for it includes keys of the genera and descriptions of all the species on record for the British Isles, and three plates of descriptions of new species. The author has made use of the Dr. George collection of 41 mounted specimens (21 British species) of Thrombididæ in the Hull Museum, and has been assisted with material by several Yorkshire workers.

YORKSHIRE SPECIMENS.

The Yorkshire references are therefore numerous, including the following species:—THROMBIDIIDÆ: *Allothrombium fuliginosum* Herm., *Sericothrombium brevismanum* Berl. (= *Trombidium mushami* Geo.), *S. schlarlatinum* Berl., *Enemothrombium clavatum* Geo., *E. pexatum* K., *E. bullatum* Geo., *Georgia ramosa* Geo. (= *Ottonia sheppardii* Geo.), *Microthrombidium pusillum* Herm., *Podothrombium filipes* K., *Johnstoniana eximia* Berl., *J. errans* Johnston, *Eothrombium echinatum* Berl., *Smaridia ampulligera* Berl., *Rhyncholophus phalangioides* De Geer, *R. pachypus* sp. nov., *Belaustium miniatum* Herm., *Achorolophus globiger* Berl., *A. norvegicus* S. Thor., *A. falconerii* sp. nov., *Cyta latirostris* Herm., *Bdella pallipes* L. Koch. GAMASIDÆ: *Trachyruropoda coccinea* Mich., *Uodinychus janetii* Berl., *Episeius italicus* Berl., *Macrocheles superbus* sp. nov., *M. longispinosus* Kr., *Cyrtolaelaps nemorensis* K., *C. transisalæ*, Oud., *C. cervus* Kr., *Pergamasus coniger* Hull, *P. runcatellus* Berl., *Gamasus fimetorum* Berl., *G. anglicus* sp. nov.

AN ENTOMOLOGICAL CONTORTIONIST.

In a recent number of *Nature* (p. 366), a writer describes how he caught two specimens of a rare butterfly. He says: 'These were captured without a net, by what I imagine is a well-known method. When the butterfly alighted I approached it from behind, keeping as well out of the range of its eyes as possible, and moving *very slowly*. When within arm's reach the hand was slowly stretched out, keeping it as low as possible

and behind the insect Now in the case of the two butterflies referred to, one was picked off a leaf of a bush, and the other had settled on my shoulder.' We would have given something to have seen the writer *very slowly* stalking the latter butterfly from behind, and when at arm's length, stretching his arm out and keeping it as low as possible and behind the insect !

BRITISH WHALES.

The British Museum (Natural History) has issued Dr. S. F. Harmer's Fifth Report on Cetacea stranded on the British Coasts (2/6) ; the present dealing with the year 1917 records. Among the more noteworthy are a white-sided Dolphin (*Lagenorhynchus acutus*) from Lincolnshire, a sperm whale (Caithness) ; a Cuvier's whale (Co. Clare) ; a Risso's Grampus (Devon), and a Rudolph's Rorqual from the Scillies. There is a special report dealing with the occurrence of the Bottle-nosed Whale in British waters. From the excellent map which accompanies the report it would seem that, besides the Lincolnshire record already referred to, the other northern-county records in 1917 were a white-beaked dolphin (Humber) ; two porpoises (Lincs.) ; and a Bottle-nosed Dolphin (Lancs.).

POPULARISING SCIENCE.

Mr. Wilfred Mark Webb, the Secretary of the Selborne Society, is appealing to the Secretaries of various provincial societies to solicit the aid of the local members of Parliament 'to bring into existence joint scientific committees throughout the country with a view to popularising science, and to offering advice to local and other authorities.' This is the Selborne Society's scheme, and if carried out may do good, though fortunately, in Yorkshire, as with the south-eastern counties, a strong union of the local scientific societies is already carrying out the suggestion made by the Selborne Society.

LEEDS WAR MEMORIAL.

'Subscriber,' writing to the *Yorkshire Post* recently, under the above heading, makes some extraordinary suggestions in reference to what he considers should be the future of the Leeds Literary and Philosophical Society. He seems to wish it to be transformed into a species of superior Café. If he may be taken as a type of the members or owners of the Society, the sooner the Society changes its name to 'The Leeds Public House and Refreshment Company' the better. There may or may not be a pressing need for a meeting ground 'for people of larger means,' where afternoon teas, music, cards, luncheons, dinners, etc., may be provided, but such an Institution hardly comes within the scope of a Literary and Philosophical Society. If the present members consider that the Society's work should be on such lines the Corporation

should take charge of its Museum quickly. Without disparaging in any way the good work Mr. Crowther is doing, it would be interesting to know in what way the Leeds Museum is 'the second in importance in the whole country.'

FOSSIL EARTHQUAKES.

At a recent meeting of the Geological Society of London, Prof. P. F. Kendall read a paper on 'Wash-outs in Coal Seams and the Effects of Contemporary Earthquakes.' A report appeared in *The Yorkshire Observer* from which we gather that Professor Kendall pointed out that there occur in all Yorkshire coalfields occasional interruptions of the coal seam of a character which constitute a peculiar disappointment to mining engineers, since they involve the absence from within the area of a lease sometimes of millions of tons of coal which might reasonably have been assumed to have been present. These interruptions offered problems fairly to be considered, both in a scientific and an economic aspect, among the most important remaining unsolved in Coal Measure geology. A large class of such interruptions were correctly interpreted by mining engineers as due to river action. The coal, accumulated not as mere drifted material but as a species of peat which grew on the spot on which the seam was now found, under conditions alluvial if not actually deltaic, and certainly undergoing slow depression. Through such an alluvial swamp rivers would meander, cutting courses for themselves. From time to time, under the influence of floods, new courses would be torn out in the accumulated peat and other materials. These meanders and flood channels, would in turn be abandoned, and would become filled with sand or mud, or they would remain as stagnant back-waters accumulating a vegetable mud, which would become canal.

OLD RIVER CHANNELS.

Many such river channels could be identified. One existed on the Top Hard or Barnsley Bed Coal on either side and doubtless beneath the town of Worksop. An elaborate network of channels existed in the Haigh Moor seam in the district between Wakefield and Kippax on the north-west, and Ackworth and Pontefract on the south-east. Several other seams also showed examples, which had been less perfectly explored. Associated with the evidences of such river-channels in the coal seams were other disturbances of a different type, though commonly miscalled by the miners 'wash-outs.' Only one agency—namely, earthquakes—was capable of producing such phenomena as those presented, and Professor Kendall stated his conviction that in Coal Measure times earthquakes had an importance which has never hitherto been suspected. Earthquakes are in these days especially frequent in alluvial

tracts such as was the area in which the vegetable materials of the coal seams were accumulated, and their effects are in such localities especially impressive, being proportional to the mobility of the materials through which the seismic impulse is propagated. In the coal measures the peat-beds were individually on a scale vastly greater both in thickness and area than are the peats in any area of the modern world where earthquake phenomena have been studied. Therefore it might reasonably be supposed that some of the effects of earthquakes must, in Coal Measure times, have been of a magnitude proportionately greater than the effects produced in the areas of modern earthquakes.

EARTHQUAKE PHENOMENA.

The phenomena presented by the coal seams and the modern earthquake areas were exactly similar. The formation of permanent and transient ridges, troughs, and fissures, the lurching out of place of belts of the superficial strata, great displacements, due to the subterranean flow of quicksand, and traces of the caving-in of river banks had all been recognised by Professor Kendall in coal seams in the Midland Coalfield, in Lancashire, and elsewhere, and many examples from Yorkshire and Nottinghamshire were adduced and described. A striking abnormality in coal seams consisted in the intrusion into coal of shapeless masses of sandstone. These were interpreted as due to the invasion into the seam of sands rendered mobile by excess of water, and moving under the impulse of earthquake waves.

PUZZLES FOR MINING MEN.

The elastic compression of an earthquake wave would tend to push forward the water contained in a peat-bed enclosed beneath a cover of laminated clay or mud. Where this cover was impenetrable, the effect would be transient; where the tenacity of the cover could be overcome, water would be ejected from the peat. If this passed into a sandbed a quite small excess of water beyond the bare quantity required to fill the interspaces of the grains would be sufficient to convert the sand into fluid quicksand, and this, responding to the earthquake, would in turn be extravasated into adjacent beds or expelled to the surface as 'sand-blows'—the sort of geyser-like eruptions of sand and water which were invariable accompaniments of earthquakes in alluvial areas. Of the effects of the extravasation of sands many notable and weird examples which had puzzled mining engineers—notably great rolls some 30 ft. high at Altofts, near Leeds, and Ackton Hall pits—were described. Peculiar masses, which Professor Kendall interpreted as casts of the orifices through which sand-blows had operated, existed in hundreds in the Yorkshire and Notting-

hamshire pits, but, curiously, had never been described by the geologist. Several specimens were exhibited by the lecturer.

'LURCHING.'

'Lurching' out of place of the superficial strata occurred on a considerable scale in the Coal Measure earthquakes as in the modern earthquakes. The ancient evidence was found in the gaps often miscalled 'wash-outs,' in respect to which the local loss of coal was compensated for by swellings or folds of the seams, or by the over-riding of the seam by great flakes of coal still retaining the characteristics of the seam. Much evidence existed to show that these over-ridings were not moved by any tectonic or mountain-building stress within the earth's crust, and they were only explicable on the supposition that a mass of unconsolidated or but partly consolidated peat-stuff or lignite was projected forward by its own inertia in a medium of sand which, through excess of water and gases, had only such resisting power as belongs to a fluid.

'ROCK-RIDERS' IN CUMBERLAND.

Dr. A. Gilligan followed Prof. Kendall's address with a paper 'On Sandstone Dykes or Rock-Riders in the Cumberland Coalfield.' The occurrence of these sandstone dykes was brought to his notice when engaged in investigations into the interruptions in the coal-seams of this area. They have been encountered at various times in pits distributed all over the Coalfield; but those more particularly examined were met with in the workings of the Bannock Band and Main Band Seams at Ladysmith Pit, one and three-quarter miles south of Wellington Pit, Whitehaven. The pit-shaft is 1080 feet deep, and has been sunk through the St. Bees Sandstone, Gypsiferous Marls, Permian, and Whitehaven Sandstone to the productive Lower Coal Measures. Splendid cliff-sections of the Whitehaven Sandstone and succeeding beds, which dip southwards, can be seen in a traverse of the shore from Whitehaven southwards round Saltom Bay. The coal-workings have been opened up south of the shaft, and therefore pass under St. Bees Head.

SANDSTONE DYKES.

The dykes certainly pass through the Bannock Band and Main Band Seams and the intervening measures, which are about 54 feet thick; but their full vertical extent has not been determined. Their horizontal extent is variable: the longest has been traced for more than a mile. They all run practically parallel one to the other in a direction approximately north-north-west and south-south-east. The inclination of the same dyke is not constant, but the greatest deviation from the vertical was 10° south-westwards, and in general the amount was very small. In only one case was a dyke found associated with a small fault, the displacement being 2½ feet, and even

this died out in a short distance. A noticeable feature was the presence of slickensiding, approximately horizontal, on the sandstone surface. Flutings, simulating ripple-marks, were present on the sides of the sand-stone forming the dyke.

AGE OF DYKES.

An examination of the cliff-sections of Saltom Bay, where dykes of the same series as those at Ladysmith Pit should emerge, shows that they are not present in the Whitehaven Sandstone and succeeding beds. The inference was, therefore, drawn that they were of pre-Whitehaven Sandstone Age. The probable conditions which obtained at the time of the formation of the fissures and their infilling were as follows:—The coal-seams through which the dykes pass had been compressed to their present thickness, while they and the associated measures were sufficiently consolidated to take a more or less clean fracture. The sea in which the deltaic material of the Whitehaven Sandstone was accumulating covered the area. Fractures were produced by earthquake disturbances set up by movement along one of the north-north-west and south-south-east faults, and the sediment on the sea-floor ran in and sealed them up.

DURHAM GLACIAL BEDS.

At a recent meeting of the Geological Society of London, Mr. C. T. Trechmann read a paper 'On a Bed of Interglacial Loess and some Pre-Glacial Fresh-water Clays of the Durham Coast.' He pointed out that a few years ago he described a bed of Scandinavian drift that was found filling up a small pre-Glacial valley-like depression at Warren-House Gill on the Durham coast. This section and others north and south of it have been kept under observation at different times, and several new features have been noticed as the high tides and other agencies exposed parts of the coast. Towards the southern end of the old pre-Glacial valley at Warren-House Gill a bed of material, varying from 4 to 12 feet in thickness, was found overlying the Magnesian Limestone and also the Scandinavian drift. This material has been carefully examined chemically and microscopically, and proves to be identical in chemical and physical characters with a sample of the true Continental loess. It is light brown or fawn in colour, very porous and extremely finely divided, and is devoid of plasticity. Towards the base, where it has not been disturbed since it was laid down, it contains a number of rounded and elongated, often very hard, calcareous concretions. In the cliff-section it shows little or no trace of bedding, but tends to break down along vertical clefts and cracks. It passes upwards into a few feet of material that consists of loess which has been partly redeposited by water, and is mixed with sand, gravel, and other material derived from the Scandinavian drift.

LÆSS.

The bed of læss and redeposited læss-like drift has suffered much decalcification and weathering; near its surface there was a large boulder of Norwegian titaniferous syenite which was superficially rotted, and decomposed to a considerable depth. Smaller granitic erratics in the redeposited læss are generally very much rotted. The limestone rubble and stones beneath the læss are strongly calcreted, apparently by material leached out of the læss. In a fissure beneath the læss some mammalian bones were collected, including astragali of two species of *Cervus*. It is argued that the formation and subsequent decalcification of the læss deposit lying upon the Scandinavian drift indicates an Interglacial lapse of considerable duration, as great as that which Continental geologists call an Interglacial Period, before the overlying English and Scottish drift was deposited.

A YORKSHIRE COMPARISON.

The President (Mr. G. W. Lamplugh) said that the author was to be congratulated upon a notable addition to our scanty list of fossiliferous pre-Glacial or early-Glacial deposits in Britain. That the fossils were found between tide-marks is in keeping with the usual condition on the East Coast, as in this position, where the deposits are permanently saturated, the fossils are more likely to be preserved than at higher levels where they are subjected to the circulation of ground-water. The deposit described as læss seemed hardly to deserve the prominence ascribed to it by the author. The heterogeneous drift-material of the Yorkshire coast included many limited local deposits of peculiar composition, doubtless due to the complex conditions at or near the fluctuating ice-border, and these were particularly numerous and variable in Holderness between the 'Basement Clay,' which was the equivalent of the author's 'Scandinavian drift,' and the 'Purple Clay,' equivalent to part of his 'Main drift.' But in many places there was evidence for uninterrupted glacial conditions from the deposition of the lower boulder-clay to that of the higher. The significant feature of læss in the typical regions was its wide extension in homogeneous sheets; and it seemed hardly advisable to apply the term specifically to a small isolated patch such as that described. The author's attempt at a general classification of the drifts on the basis of the Durham sections deserved consideration, but was necessarily of limited value, like the many previous attempts of this kind. The speaker's experience had been that the sharp boundaries observable among the East-coast drifts in several localities, though often traceable for some distance, always faded out sooner or later, and were not confined to any particular horizon.

CARBONIFEROUS OF CLITHEROE.

At a recent meeting of the Geological Society of London, Drs. Wheelton Hind and A. Wilmore read a paper on 'The Carboniferous Succession of the Clitheroe Province.' The tectonic structure of the province consists of three dissected parallel anticlinal folds in beds of Carboniferous-Limestone, Pendleside, and Millstone-Grit age. The general direction of the axes of these folds is east-north-east and west-south-west. Dissection has exposed the lower beds of Z, C and S age, as the tectonic axes and beds of D, P, and Millstone-Grit age occur on the flanks. The Limestone sequence shows all the zones from Z to D. *Modiola* and *Cleistopora* phases have not been exposed, the base of the Carboniferous not being seen. The Z beds are much thickened, and not so fossiliferous as in the Bristol Province. C and S beds are, as a rule, well-bedded, with shales intercalated between beds of limestone. There are crinoidal beds of considerable thickness in places, and shell-breccias are common in S. *Zaphrentis omaliusi* indicates an important horizon in Lower C, and these beds are characterized by numerous large gasteropods. *Productus humerosus* (*sublævis*) marks an equally important horizon in Upper C, as it does in the Belgian Province. D beds are peculiar in the western part of the Clitheroe Province, and are largely represented by shales, mudstone, and thin earthy limestones; but in the north and north-east, in the Settle and Burnsall districts, thick, fossiliferous, obscurely-bedded limestones with a rich brachiopod and molluscan fauna occur. The Pendleside Series is well developed, and practically the whole sequence is exposed on the north-western flank of Pendle Hill. This series can be subdivided into life-zones by the Goniatites.

GONIATITE ZONES.

An important horizon occurs between the Kinderscout and the Millstone Grit—Sabden Shales—characterized by a rich fauna with *Glyphioceras beyrichianum* and *Glyphioceras reticulatum*. It is considered probable that the well-known fossiliferous Hebden-Bridge Beds may be on this horizon rather than in the Pendleside Series.

TABLE OF GONIATITE ZONES.

Zones of the Pendleside Series.	'Middle' Coal Measures.	<i>Gastrioceras carbonarium</i> von Buch.
	Lower Coal Measures.	<i>Gastrioceras carbonarium</i> von Buch.
	Upper Millstone Grit.	<i>Gastrioceras listeri</i> Martin.
	Sabden Shales.	<i>Glyphioceras diadema</i> Beyrich.
	Shales below Millstone Grit.	<i>Glyphioceras bilingue</i> Salter.
		<i>Glyphioceras reticulatum</i> Phillips.
	Bowland Shales.	<i>Glyphioceras spirale</i> Phillips.
		<i>Glyphioceras striatum</i> Phillips.
	<i>Posidonomya becheri</i>	<i>Nomismoceras rotiforme</i> Phillips.
	Shales.	<i>Prolecanites compressus</i> Sowerby.
	Carboniferous Limestone D.	<i>Glyphioceras crenistria</i> Phillips.

FOSSILS OF THE HOLDERNESS BASEMENT CLAYS. WITH DESCRIPTIONS OF NEW SPECIES.

ALFRED BELL

SINCE my last communication (*The Naturalist*, 1917, p. 95), I have, through the kindness of Dr. Marr, Messrs. T. Sheppard, Headley and other friends, been able to make further additions to the lists of species then known, and to get identified other forms imperfectly known, or catalogued. Mr. Headley has generously allowed me the use of his beautiful collection. The

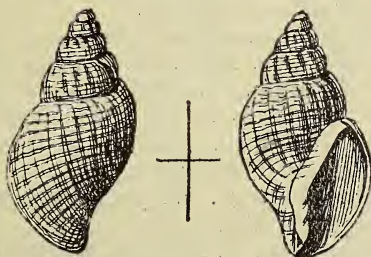


FIG. 1.—*Admete viridula sheppardi* sp. nov.

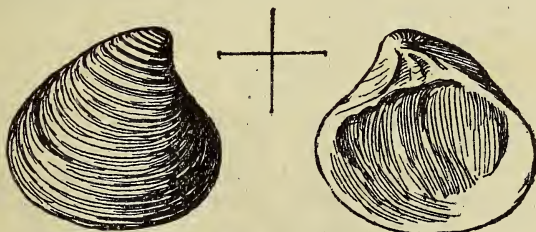


FIG. 2.—*Astarte apiculata* sp. nov.

Hull Museum has yielded* some new species (*Piliscus commodus* and *Portlandia arctica* and the Cambridge (Sedgwick) Museum (Leckenby Collection), others. The fishes have been amplified from lists of Mr. E. T. Newton (*Q.J.G.S.*, 1884, p. 332).

In addition to this list of additions to the 'Bridlington Crag' fauna, I am able to describe three species as new to science, viz., *Admete viridula sheppardi*, *Littorina headleyi* and *Astarte apiculata*.

The letters *a*, *b*, *c*, indicate the collections in which the following specimens occur, viz., *a*, Hull Museum; *b*, Sedgwick Museum, Cambridge; *c*, Headley Collection.

* *i.e.*, produced, but still possesses !—ED.

MOLLUSCA.

c *Admete tabulata* Friele.

c *Admete viridula sheppardi*, n.sp. A. Bell. (fig. 1).

Shell slender, elongated, apex rounded, blunt, whorls 6-7, convex, suture deep, mouth arcuated, canal open, columella bearing 2.3 plaits, surface indented with deeply impressed spiral striæ and slightly elevated costæ on the upper part. L. 15, B. 8 m.m. I have associated this pretty form with the name of my good friend T. Sheppard, F.G.S., both as a Bridlington man, and in remembrance of his many acts of kindness to me personally.

b *Buccinum undatum crassum* King.

b *Cemoria (Puncturella) noachina* Linne.

Wood (*Crag. Moll.*, pl. xviii., fig. 5) figured a shell, now in the Sedgwick Museum, Cambridge, much larger than the normal type. It seems to be either a new species or a very abnormal-sized shell. The usual type occurs in the same collection from Bridlington.

c *Lacuna crassior*? Montagu. A young example.

c *Littorina saxatilis* Johnstone.

c *Littorina headleyi*, n. sp. A. Bell. (*L. globosa* Jeffreys). |

Dr. Jeffreys had already (in *Brit. Con.* Vol. 3, p. 365), utilised the name *globosa* for a variety of *L. rudis*. The type being in Mr. Headley's collection I have renamed it as above.

c *Menestho sulcosa* Mighels.

c *Menestho truncatula* Odhner.

c *Natica (Lunatia) nana*, Möller.

a *Piliscus commodus* Middendorff.

I find in Mr. Headley's series another imperfect and ribbed shell, named by Jeffreys *Fusus curtus*. The specimen belongs to the Searlesia group and is not unlike *S. lundgreni* Mörch, from the Icelandic pliocenes (see F. W. Harmer, *Plioc. Moll.*, pl. xiv., fig. 10).

c *Anomia aculeata* Müller.

c *Modiola phaseolina* Phillips.

c *Astarte nana* Jeffreys (see ante, p. 96), is referred to by the late E. A. Smith, to *A. castanea* Say.

c *Astarte apiculata* (n. sp.) Fig. 2.

This shell is unlike any of the numerous examples of Bridlington *Astartes* that I have seen, and it does not appear to have been noticed by Dr. Dall (*Proc. U.S. Nat. Museum*, Vol. XXVI., p. 933, 1908), nor by E. A. Smith 'On the genus *Astarte*' (*Journ. Conch.*, Vol. 3, 1882, p. 196). Shell strong, solid, rather globose, ovately triangular, apex acute, base rounded, lunule deep, escutcheon long, rather broad. margin plain, hinge strongly toothed, exterior surface strongly ribbed with broad interspaces above, passing downwards into crowded irregular striæ. H. 14, B. 15mm.

a Portlandia arctica Gray.

Cyrtodaria siliqua Lamarck.

Mr. C. F. Trechmann, F.G.S., writes me that he has obtained an example from the Durham equivalent of the Bridlington beds.

Spines and plates of a small Echinus, *E. norvegicus*, are plentiful, and Mr. Headley's siftings have yielded *Spirorbis spirorbis*, a well marked Cellipora, and some Crinoid ossicles.

Some patches of peaty matter of lacustrine origin occur amongst the basement clays, apparently the relics of a land surface older than the purple clay. They have yielded a few species which have been identified as *Bithynia tentaculata*, *Helix* (*Hygromia*) *hispida*, *H. (Cepæa) nemoralis*, *H. (Fruticola) striolata*, *Limnea palustris*, *L. pereger*, *Planorbis leucostoma*, *Succinea oblonga*, *S. schleiermacheri* var. (all *a*).

FISHES.

Raja batis (Grey Skate).

Notidanus serratisimus (*microdon* E.T.N.) and a lower symphyseal tooth probably of the same species (A.S.W.).

Lamna (Odontaspis) subulata, and other forms not yet identified.

Belemnostomus. In note put with the specimen, Mr. E. T. Newton says of two teeth in Mr. Headley's coll., 'resembling those of *Belemnostomus*.'

Gadus morrhua (Cod), Sewerby.

G. aeglefinus (Haddock).

G. minutus (Power Cod).

G. virens ? (Coal Fish).

G. merlangus (Whiting).

Chrysophris s.p.

Platax woodwardi. Bones of this fish are very common. They are in the same condition as those in the earlier Crag deposits.

Fragmentary teeth of *Myliobatis* and *Carcharodon* are occasionally met with, but are not sufficiently perfect for determination.

It is an open question whether these are an integral part of the Bridlington fauna, or derived from other sources, and incorporated with it. I do not think very much of the theory of derivation unless supported by incontestable evidence, believing that many species have and had a longer range in time than is usually credited.

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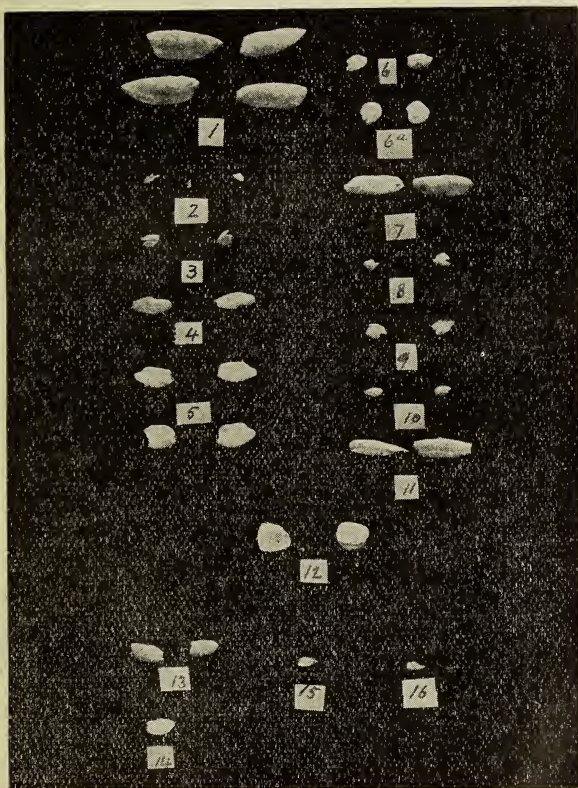
Part XVII. of 'Yorkshire Type Ammonites,' by S. S. Buckman, excellently illustrated by Mr. J. W. Tutchter's photographs, has recently appeared, and contains descriptions of *Ammonites gregarius*, *dissimilis*, *crassus*, *parvum*, *nudicosta* and *rotundatum*.

THE HEARING ORGANS OF FISHES.

JOSEPH SMITH, M.R.I.A.

WE may in truth attribute the acquisitions in scientific knowledge generally to the utilization of natural forces, which distinguishes the present from the past, and the naturalist has, from a careful prolonged and profound study in recent times of natural phenomena, of the exact observation of the laws governing such phenomena, been enabled to explain many features which alone by the assistance of skilful appreciation of the laws of natural forces, he has been able to recognise. Among the category of natural phenomena, light and sound may be recognised as being in the earlier stages of evolution two of the most inexplicable, since it is difficult to conceive any laws which govern these phenomena, and which, *ipso facto*, explain them. In dealing with the theory of sound which apparently was the minor, it would be inaccurate to separate it from that of light, since it was during the experiments conducted to ascertain what laws governed the latter phenomenon, that by chance revealed those explanatory of the theory of sound. To Decartes we may attribute much elucidation of natural phenomena, and he shows that the shock of the waves on the eye produce a vision, and from this it was argued by analogy that sonorous impressions are the shocks of waves on some organ so arranged as to intercept and accept the undulatory motion. Thus it is seen that both phenomena, sound and light, are governed by the same laws of mechanics, but in working these out to completion a serious difficulty presented itself, disorganizing the analogy for the time being; for inasmuch as the waves which produced light travel in a direct line, those responsible for sound need not necessarily do so, but may pass round any obstructing object and follow circuitous routes without sacrificing any of their influential power. This divided physicists into two camps, one advocating the theory of emission, while the other adhered to the theory of waves; each section claiming the superiority of the theory it supported. The results which this competition added to natural philosophy, in the new phenomena which were brought to view, were ample to prove the wave theory, and Newton originated a series of questions on the subject of light and sound. Speaking of the conditions of light, he argued that light was never known to follow crooked passages or bend into shadows. This may be regarded as the genesis of the theory of sound, since to this assertion were due the experiments on light, which eventually substantiated the laws which governed sound, and which were attained through the investigations of Young on thin plates. Presuming the homogenous luminous ray is analagous to the sonorous wave produced by a musical

instrument everything is explained with extreme simplicity.* This, however, though correct, was a novel theory, and Young failed to give any *experimentum crucis* to substantiate his proposition, the result being, that the wave theory again fell into the vortex of controversy in which the most skilled geometers of the period—Laplace, Biot, Poisson, and Huygens—figured. This controversy was the means of Malus discovering



1. Cod ; 2, Herring ; 3 & 8, Gurnett ; 4, Conger Eel ; 5, Halibut ; 6, River Sole (female) 6a, River Sole (male) ; 7, Haddock ; 9, Brill ; 10, Trout ; 11, Whiting ; 12, Bluet Ray ; 13, Great Weevil 14, Fluke (female) ; 15, Pollard ; 16, Catfish.

and explaining the phenomenon of polarized light, and shortly after Fresnel investigated the question of rays and shadows. He reduced diffraction to an analytical problem, and availing himself of the two minor experiments, he proved the wave theory, and demonstrated the complete analogy of the luminous

* *Nature*, Vol. LX., p. 295.

ray and the wave of sound. His theory of diffraction shows that light is produced in a straight line, on account of the waves being extremely small, while sound is diffuse because the lengths of the sonorous waves are very great. A still further difficulty was set at rest, that of polarization, since the two phenomena, light and sound, being governed by similar laws, the sequence would be they would attain equal sensitiveness to outside influences. The non-sensitiveness of sound waves, however, to the influence of polarization is due to the fact that the vibrations of the sound waves are longitudinal, and consequently cannot be affected by polarizing influences, while the vibrations of the light waves being perpendicular render them sensitive to the refractive analysis of the prism.

These introductory remarks on the sound waves will facilitate a better comprehension of the faculty of hearing, a sense possessed by all animals and the greater majority of Invertebrates. Now, since the sound waves are diffused and may pass round an obstructing object without losing their power, it is only requisite that a suitable organ for the inception of such sound waves should exist, and the individual in which such organ is found to exist is capable of distinguishing sound. It does not follow, nor is it necessary that such organ should have a similar arrangement to that found in man; nor again, is it requisite for the fulfilment of the phenomenon, that each apparatus should occupy the same position as in mammals. All required is the apparatus sensitive to sound waves, and the nerve inceptive to its vibration, by which such vibrations are conducted to the centre ganglion, and so diffused as in the higher animals to the brain, or carried on to other nerves sympathetic to such movements, as in some insects, or as in others, complete their energy in absorption by the ganglion. Hence so called ears or hearing organs may occupy strange positions in various families of the Vertebrate and Invertebrate Kingdoms.

(To be continued).

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Mr. A. W. Stelfox has 'Notes on the Lake-forms of *Limnaea pereger*' in *The Irish Naturalist* for January.

The Hastings and East Sussex Naturalist, Vol. III., No. 1, besides reports, contains a lengthy and well-illustrated paper on Prehistoric Hastings, by A. Belt; The Flight of Birds, by G. V. Webster; The Brighton Rubble-Drift Formation, by E. A. Martin; Potato Spraying, by E. S. Salmon; and Notes on the Local Fauna, Flora, etc., for 1917, by W. Ruskin Butterfield. The last include records both zoological and botanical. But we don't like the method of naming birds—though it may be correct according to some lists; the Magpie is *Pica pica pica*, the Swift is *Opus opus opus*; the Snipe is *Gallinago gallinago gallinago*, the Quail, *Coturnix coturnix coturnix*, and so on. It is a pity we have not a 'recurring' sign in zoology; it would save much space and type.

THE APTERYGOTA OF YORKSHIRE AND DERBYSHIRE.

JAMES MEIKLE BROWN, B.Sc., F.L.S., F.C.S.
Sheffield.

SINCE my previous communication dealing with this subject (4),* a further large quantity of material has been collected and examined, enabling me to add considerably to our records for South Yorkshire and North Derbyshire.

Most of the species mentioned in the present paper are comparatively little known in this country, many of them having been recorded once or twice only. Several of these, such as *Micranurida pygmæa*, *Tullbergia quadrispina*, *Megalothorax minimus* and *Acerentomon doderoi*, are of special



Fig. 1.—*Megalothorax minimus*. × 180.

interest. The systematic position of the last is at present doubtful, and perhaps it should not be included amongst the insects at all. *Acerentomon doderoi* was discovered by Silvestri (9), who, in 1907, created the order 'Protura' for its reception, regarding it as related to the Thysanura. Later and more detailed work by Berlese (2), led him to believe it—and the associated species by that time known—to be more closely connected with the Myriapods; he therefore renamed the order 'Myrientomata.' The members of this order present many structural features of peculiar interest, perhaps the most interesting of which are the absence of antennæ, and the presence of paired abdominal appendages. They exhibit also, during their life-history, the phenomenon of 'anamorphosis,' that is, the number of abdominal segments increases during 'larval' life; a feature shared also by the Myriapods.

* The numbers in brackets after authors' names, refer to the literature at the end of this paper.

I have followed Silvestri in placing them provisionally near the *Thysanura*.

The following records are either new for these counties, or else they extend the known localities for some of the less-known species.

ORDER : COLLEMBOLA.

Family : PODURIDAE.

Achorutes purpureus Lubb.

This species occurs under stones and bark. Beauchief,* Bakewell,* Haddon.*

var. *inermis* Börner. This variety seems to be rare. Found in rotting willow wood, Haddon.*

Xenylla grisea Axels.

This is the first record for Derbyshire, but the species is frequently found under bark and amongst leaves. Lathkil Dale,* Cordwell,* Monk Wood,* Grindleford.*

Pseudachorutes subcrassus Tullb.

Found most often under bark and amongst leaves, but I have also obtained it in Sphagnum. Owl Bar,* Cordwell.*

P. asigillatus Börner.

This species has been previously recorded for Herts, by Collinge and Shoebornham. It seems to be rare, but is sometimes found under bark. Totley.*

Friezea mirabilis (Tullb.) D.T.

Under bark. Bakewell,* Totley.*

F. claviseta Axels.

Rather more frequent than the last, also under bark. Wharnccliffe, Dovedale,* Lathkil Dale,* Bakewell.*

Anurida granaria (Nic.) Tullb.

On damp earth. Haddon.*

Micranurida pygmaea Börner.

This is one of the smallest species of the order. It occurs amongst moss and leaves. It was first described by Börner in 1901 (3), and has previously been found in Bucks. by Shoebornham (8). It reaches a length of .4 mm. Totley,* Holmesfield,* Ecclesall Woods.

Onychiurus fimetarius (L.) Lubb.

Oughtibridge, Lathkil Dale.*

Tullbergia krausbaueri (Börner).

Occurs under leaves and stones. Totley,* Lathkil Dale,* Ecclesall Woods.

T. quadrispina (Börner).

This is one of the rarer species ; it occurs in damp earth. Totley,* Lathkil Dale.*

Family : ENTOMOBRYIDAE.

Folsomia quadrioculata (Tullb.) Axels.

Carpenter (5) says of this species, that 'it is one of the least-known members of the Britannic fauna.' I find it, however, quite commonly among dead leaves, and often under bark. Ecclesall Woods, Oughtibridge, Totley,* Cordwell,* Bakewell,* Barlow.*

Isotoma sensibilis Tullb.

This species occurs very frequently under bark and among dead leaves, often in association with *I. cinerea*. Lathkil,* Dovedale.*

I. minor Schaff.

This delicate, eyeless species is often found among dead leaves. Ecclesall Woods, Totley,* Cordwell,* Bakewell,* Lathkil.*

* Localities starred * are in Derbyshire ; the remainder are in Yorks.

Tomocerus vulgaris (Tullb.).

This animal is less common than **T. minor**. Oughtibridge, Baslow,* Beauchief.

Lepidocyrtus albus Pack.

This is an occasional form among dead leaves. Monk Wood.*

Orchesella villosa (Geof.) Lubb.

I do not find this species at all common. It occasionally occurs under stones. I have also collected it in Middlesex. Bakewell.*

Heteromurus nitidus (Templ.).

Fairly commonly under stones, but never in large numbers. Oughtibridge, Haddon,* Buxton,* Lathkil,* Dovedale.*

Family : NEELIDAE.

Megalothorax minimus Willem.

This is perhaps the smallest and the most curious insect known at present, reaching 3mm. in length (fig. 1). It was described by Willem in 1900 (10), from specimens taken in the Botanical Gardens at Ghent. It is easily overlooked, and has been recorded only once or twice for England. I have obtained it frequently in humus and among dead leaves. Ecclesall Woods, Totley,* Holmesfield.*

Family : SMINTHURIDAE.

Sminthurinus aureus var. **ochropus** (Reut.).

This species occurred in very large numbers in and about an old stone wall at Beauchief, during October. It might easily be mistaken for **S. niger** (Lubb.), which, however, is found in conservatories.

Bourletiella bicinctus (Koch.). (= **cinctus** (Tullb.)).

forma principalis.

var. **repanda** (Agr.) Axels. (= ? **sulphurea** (Koch.)).

var. **pallipes** (Lubb.).

The nomenclature of this species appears to be rather doubtful. (See Linnaniemi (7).) The type form, a striking yellow insect, with two distinct dark bands across its back, occurs in association with the two varieties, but is less common, the yellow var. **repanda** being the most frequent, and probably often confused with **B. lutea** (Lubb.). Lathkil,* Via Gellia,* Ashford.*

B. insignis (Reut.).

This species is frequently found on plants in damp situations. Owlter Bar,* Haddon.*

B. bilineata (Bourl.).

Amongst grass. Haddon.*

ORDER : THYSANURA.

Family : CAMPODEIDAE.

Campodea gardneri Bagn.

I have frequently found this species, recently described by Bagnall (1), under stones. It is, however, not so common as **C. staphylinus**. Wharnccliffe, Monk Wood,* Dore.*

Family : MACHILIDAE.

Premachilis hibernica Carp.

In my previous paper (4), this insect was incorrectly referred to as **Machilis polypoda**. Via Gellia,* Bakewell,* Lathkil.*

ORDER : PROTURA.

Family : ACERENTOMIDAE.

Acerentomon doderoi Silv.

This curious animal occurs frequently in humus. Totley,* Ecclesall Woods.

The following species have been found on various vegetables such as lettuce, cabbage, marrow, in Sheffield gardens. They probably do a considerable amount of damage by carrying fungus spores, upon which they feed—as has been proved by Dr. Collinge, (6)—into wounds in the cuticle of the plants.

Achorutes armatus Nic.

Folsomia fimetaria (L.) Tullb.

Onychiurus fimetarius (L.) Lubb.

Isotoma grisea Schaff.

O. ambulans (L.) Nic.

Entomobrya multifasciata (Tullb.)

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Everybody's Flower Book. By F. M. Ramsay. London: Simpkin Marshall, pp. 126, 5s. net. The writer is obviously a flower lover and writes chattily and pleasantly on the subject. After a short account of a few common flowers and their poetic associations, practical details are given on gathering flowers, the apparatus needed for their display, followed by chapters on arrangement, table decoration, wild flowers, packing, and gardens. There are sixteen plates from drawings by M. Snape, and a number of text figures.

The Exploitation of Plants. Edited by F. W. Oliver, F.R.S. London: Dent, pp. 170, 3s. net. This little book edited by Prof. Oliver is the second volume of the 'Imperial Studies Series,' and consists of nine lectures delivered at University College, London, in 1917. They deal with plant food and soil problems, waste lands, timber, rubber, cotton, dyes, tea, medicinal plants, and coal. Each subject is ably treated by a well-known botanist, and the whole forms a volume of very interesting and instructive reading. In most cases a brief history of the subject is given, and branches requiring investigation are indicated. The impression left on reading the volume is the large amount of useful work done in the past by the 'practical man,' and the wide field open in the future for the trained botanist. The burden of the lectures is indicated in the last words of the book, 'Research, and yet again Research.' For this, greater facilities are urgently needed if the resources of the Empire are to be satisfactorily exploited, but we must not look for speedy and important commercial results from the interesting lines of research suggested by the authors.

THE COMMON BANDED SNAIL. A STUDY IN VARIATION.

A. E. TRUEMAN, D.Sc., F.G.S.

(Continued from page 9).

It is interesting to note that in spite of the differences in the order of development of the bands, in each case a five-banded shell is the normal. If the order of appearance of the bands in ontogeny in any way reproduces the order of their appearance in phylogeny in the several groups it may be suggested that

1. The ancestral shells were unbanded.
2. Banding has been acquired in different ways in each group.
3. For some reason, five similar bands have been developed in each group, possibly because this type of banding forms the best means of concealment*; the persistence of such a large proportion of unbanded and one-banded shells, is however, difficult to explain, in view of the rarity of two and three-banded shells.

It is thus probable that these outwardly similar five-banded forms have been evolved along several parallel lines.

There is some other evidence which indicates that the evolution of banding has proceeded in this way. For instance, the late Clement Reid found that all the *H. nemoralis* in an old tufaceous deposit were unbanded.† Similarly a number of fossil shells collected in the drift at Coddington, near Newark, show a primitive stage in shell-banding, nearly one half of the adult shells collected having the formula 00345.

So far as breeding experiments have been conducted it would appear that the banding behaves as a Mendelian factor; apparently the banded is dominant and the unbanded recessive. Thus where unbanded shells live together without interbreeding with other forms, we should expect all the shells to be unbanded. It is possible that the question is more complicated than this, however, and much careful breeding would be necessary to elucidate the problem.

The intensity of the pigment of the bands also varies considerably; the bands are usually dark brown or black, but quite frequently they are red or brown (var. *rufozonata*). In some cases, too, some or all of the bands are devoid of pigment, the band then being slightly more transparent than the rest

* E. A. Woodruffe-Peacock, *The Naturalist*, 1909, p. 178, and A. E. Trueman, 'Shell-banding as a means of protection,' *Ann. and Mag. Nat. Hist.*, Ser. 8, Vol. XVII., 1916, p. 341.

† C. Reid, *Proc. Dorset Field Club*, Vol. XVII. See also *Natural Science*, Vol. IX., 1896, p. 348.

of the shell (var. *hyalozonata*). Thus it usually happens in an area where practically all the shells are, for example, one-banded, that a shell which appears at first sight to be unbanded really has one unpigmented band.

The intensity of the pigment, moreover, may vary on a single band. This type of banding has received some attention, but apparently it has not been realised that shell secretion and the deposition of pigment do not proceed quite simultaneously, the pigment being added some time after the membrane is secreted. Further, while pigment deposition is comparatively regular, the rate of shell growth is largely influenced by the weather. Thus a dark belt of pigment frequently marks a resting period, such as, for example, a spell of dry weather. If a number of these blotched shells are collected from one plant it is usual to find that the dark blotches occur in corresponding positions on each shell, suggesting that they are due to similar conditions. That weather conditions are, at least in part, responsible for the irregular pigmentation was shown by collecting young shells at short intervals during the summers of 1916 and 1917, and noting the relation of shell growth to the weather. It is also possible to produce this type of banding by keeping snails in alternately very wet and very dry habitats.

The above conclusions support the view put forward by Mr. C. Ashford,* that all blotched shells were originally zoned; in this connection it may be mentioned that the young of *Helix aspersa*, a typically blotched shell, is distinctly banded. Rev. S. S. Pearce† took the opposite view, viz., that banded shells have arisen from blotched forms, and considers that banded *Helix caperata* are commonest in pastures because they are easily seen, and consequently avoided by the sheep. It is by no means certain, however, that snails are distasteful to sheep; the differences in distribution of zoned and blotched forms which Mr. Pearce sought to explain are doubtless comparable with the facts quoted above in the case of *H. nemoralis*.

The splitting of one or more of the five normal bands, or the interpolation of additional narrow bands, is relatively unusual in Europe. Specimens of *H. nemoralis* introduced into Lexington, however, in a very few years produced many variations of this character, a large number of which are quite unknown in Europe.‡

RELATION TO *Helix hortensis*. *Helix hortensis* is very similar in form, coloration, banding and habits to *H. nemoralis*

* C. Ashford, 'Suggestions for a Serial Arrangement of Banded Land Shells,' *Journal of Conchology*, Vol. III., 1880, p. 89.

† S. S. Pearce, 'Varieties of Banded Shells,' *Journal of Conchology*, Vol. VI., 1889, p. 123.

‡ Cockerell, *Nature*, Vol. LI., p. 393. See also H. M. Vernon, 'Variation in Animals and Plants,' *Inter. Sci. Ser.*, 1903, p. 315.

and it moreover exhibits comparable variations; yet *H. hortensis* is undoubtedly a distinct species with marked internal differences.* These two species rarely occur together; for example, in Aspley Lane (see map, fig. 1) they occupy distinct areas. Intermediate forms are uncommon and breeding does not usually occur where the two species come in contact.†

In considering species outwardly so much alike as *H. nemoralis* and *H. hortensis*, it is generally assumed that they are closely allied forms and that they have *recently* evolved, either the one from the other, or both from some common ancestor.‡ This implies that the characters they have in common were developed before the distinctive internal characters. It is much more probable, however, that these distinctions are fundamental and that the outward similarity is due to parallel development such as has been demonstrated by palaeontologists in many groups. 'Externally the individuals may be almost indistinguishable and yet belong to totally different lines of development.' §

CONCLUSION.—It is apparent from the notes given above that the so-called varieties of *Helix nemoralis* are not of equal importance. Two main divisions may be recognised, viz., those 'modifications' which may be traced to some environmental influence, || and those which are independent of the environment and are usually inherited.

I.—Variations affected by environmental influences:

Thickness of shell; extremes, *var. tenuis* and *var. ponderosa*.

Size of shell.

Irregularity of pigmentatation, leading to interrupted banding and to *var. undulata*.

Intensity of pigmentation:

(a) banding, leading to *rufozonata* and *hyalozonata*.

(b) lip-colouring, leading to *roseolabiata* and *albolabris*.

II.—Variations which appear to be independent of the environment.

Order of appearance of bands.

Number of bands.

Shell colour (?)

* J. W. Taylor. *Op. cit.*, Vol. III.

† G. Coutagne, 'Recherches sur le Polymorphisme des Mollusques de France,' *Ann. Soc. d'Agric., Sci. et Indust.*, Lyons, 1895.

‡ See, for example, W. Bateson, 'Problems of Genetics,' 1913, Chap. viii., p. 164.

§ I. Thomas, 'Carboniferous Producti,' *Mem. Geol. Surv. Palaeontology*, 1914, p. 253.

|| Lloyd Morgan, *Brit. Assoc. Rept. (Liverpool)*, Zoo. Sect., 1896. See also *Natural Science*, Vol. IX., 1896, p. 287.

NOTES ON THE ENTOMOLOGY OF THE BUBWITH DISTRICT.

W. J. FORDHAM, M.R.C.S., L.R.C.P., F.E.S.

(Continued from page 16).

**Phobocampa obscurella* Hlgr. (another rare species, the only northern record being from the Isle of Man), **Dicoelotus cameroni* Bridg. and a fine male of *Exochilum circumflexum* L., taken flying round a fir tree. Hemiptera are abundant, the most noteworthy species being **Phytocoris pini* Kb. (which I believe has also occurred to the late Capt. H. V. Corbett in the Doncaster district). Dragonflies are numerous and a few years ago *Sympetrum scoticum* Don. absolutely swarmed. The flies include **Micropalpus vulpinus* Fln., once not uncommon in flight over the heather, **Oxycera trilineata* F., an extremely pretty stratiomyid whose larva lives in mud, **Echinomyia grossa* L., bred from *Bombyx rubi* and **Therioptectes distinguendus* Verr., of which I took a specimen flying round a fir tree.

Collecting in my garden at Bubwith has been very productive during the past season. Solitary wasps were abundant, especially *Odynerus parietinus*, together with *parietum* L., **sinuatus* F. and 3-*fasciatus* Ol., a ♀ of which latter species I found investigating a hole in the rear number plate of my car. The parasitic *Chrysis ignita* L., as to be expected, has been very numerous and variable. Several fossors occur on the bushes, including *Trypoxylon figulus* and several species of *Crabro*. *Osmia aurulenta* Pz., and *leana* Kub. have been taken, and a species of leaf cutter occurs, but I have never been able to discover it (though the leaves of rose, enchanter's nightshade and fuchsia bear witness to its labours).

Many good sawflies occur in the garden including **Thrinax macula* Kl. (a rare species), **Priophorus padi* L., and **P. tristis* Zadd (?) **Pristiphora melanocarpa* Htg. and **P. ruficornis* Ol., **Pteronidea flavescens* Cam. **Loderus palmatus* Kl. and **Emphytus rufocinctus* Ratz. The Ichneumonidae of note are **Proclitus socius* Hal., (a rare species with few British records), **Hemiteles brunneus* Morl., **Polysphincta gracilis* Hlgr. (a rare species parasitic on spiders), **Melanichneumon Faunus* Gr. (an uncommon insect of which Mr. Morley only possesses three examples), *Ophion stigmaticus* Morl. (probably a wanderer from Skipwith Common where it preys on *Agrotis agathina*), **Angitia exareolata* Ratz., **Microcryptus abominator* Gr., **M. perspicillator* Gr., and **M. nigrocinctus* Gr., **Euryproctus lateralis* Gr. (a little understood species with few records).

Homocidus pectoratorius Hr. and **biguttatus* Gr. (both uncommon species parasitic on syrphids) and **Phaeogenes maculicornis* Steph.

**Bracon stabilis* Wesm. occurred on elder leaves and on a window, together with a good Chalcid, a species of **Microterys*

at present undetermined. The brilliant Chalcid **Lamprotatus splendens* Westw. was also taken in the garden. Several species of plant bugs include the northern **Calocoris alpestris* Mey. I have a large number of diptera unidentified as yet, but those worthy of mention already determined include **Hydrotaea ciliata* F. **Pegomyia bicolor* W., **Sargus flavipes* Mg. (very variable in size and colour on plum trees) and **Chrysotoxum bicinctum* L. The mosquito *Anopheles maculipennis* Mg. is common about the buildings and I took a male in November last year, which is later than any previously known date. The ♀ of course of this species hibernates.

Two males of the fossor **Diodontus luperus* Shuck. were taken on blackcurrant at East Cottingwith, from which village I have also obtained the sawfly **Pachynematus clitellatus* Lep. and the pretty Tachinid **Oliviera lateralis* F. A fine ♀ of **Theriopectes tropicus* Mg. was found on a window at Gribthope and at Ellerton in a marshy place on Iris I have taken two females of the uncommon and ichneumon-like fly **Loxocera aristata* Pz. and on a gate post in the same village the fly *Anthomyia pluvialis* L., eluded capture for ten consecutive days till I finally obtained it. Since that date I have seen no more, though for some time I went through the gate daily, so we may be fairly certain that it was the same fly, and this furnishes an instance of the curious pertinacity with which some insects cling to a particular favourite spot. In a wood near Bubwith the gall of *Oligotrophus annulipes* Hart. occurs on beech and from either this species or from *Lithocolletis faginella* which occurs on the same leaves, I have bred a minute Chalcid at present undetermined.

The ichneumon **Mesoleius filicornis* Gz. was taken at Holme-on-Spalding Moor together with *Glyphicnemis suffolciensis* Morl. (a species abundant in Suffolk, but elsewhere only recorded from Scotland and Askern). **Amblyteles negatorius* F. (a parasite of *Noctua brunnea*) occurred at Crockey Hill, the rare **Cratichneumon dissimilis* Gz. was taken at Escrick and **Glyphicnemis senilis* Gmll., hitherto only recorded from the south of England, turned up at Melbourne. **Bracon minutor* F., was taken on Barmby Common, a locality somewhat resembling Skipwith, where I took many interesting insects prior to the restrictions on the use of motor spirit for 'joy riding' and the cynipid **Cothonaspis crassicornis* Cam. was obtained from a 'horse' mushroom at Ellerton.

The above notes (including as far as I can gather nearly 70 species new to the Yorkshire list), taken in the scanty leisure afforded by a busy country practice, will serve to show that this little corner of East Yorkshire can hold its own with any other locality in the county of broadacres for the number and interest of its insect inhabitants.

COMMON WILD BIRDS OF THE SCARBOROUGH DISTRICT.

W. GYNGELL.

(Continued from page 20)

*The Linnet (*Acanthis cannabina* L.). A common bird at most times, abundant occasionally at migration time, its numbers have scarcely varied in thirty years. It may be heard singing from early January to late December, whilst in flight or perched in bush or herbage. I have not heard it early in the morning, but have known it to sing at 8-14 p.m. Its favourite nesting site is a furze bush, though other low bushes and even brambles are occasionally selected. One nest found near here was built close against the trunk of a tree two feet in diameter, a very unusual position. The materials used in building are roots, twigs, moss, grass, dead herbage, wool, hair and rabbit-fur, the positions selected being from 1 foot to 7 feet above ground. Eggs, usually 5, never more than 6 in a nest, have been found by April 25th. The weight of an egg is .07 oz. Market gardeners here are *not* friends with the linnet, who is too fond of their newly sown small seeds.

*The Lesser Redpoll (*Acanthis rufescens* Viellot). Quite as common as the linnet here in summer, though less so in winter the 'French linnet' is distinctly a bird of the eastern and north-eastern counties of England, becoming scarcer as we travel westwards. The birds arrive here in successive small parties from about April 1st, singing as they fly. Indeed, this bird is more frequently heard when on the wing than when at rest. The buzzing and rather metallic song suggests the syllables *zizzy-zizzee* continuously repeated. When nesting, its alarm note much resembles the 'sweet' of the cage canary. I have heard its song from April 2nd till October 10th, and as late as 9-40 p.m. on July 27th. Its nest, little concealed, is built in thin hedges and bushes from 5 to 12 feet above ground. It is a tiny and beautiful structure of grass, herbage stems, moss, feathers, hair, odd bits of string, leaf-bud sheaths of the beech, etc., and is always lined with willow or other vegetable down which makes the nest appear to be lined with white cotton-wool. Usually 5, but sometimes 6, eggs are laid, the weight of each being .045 oz.

The Bullfinch (*Pyrrhula europæa*). This shy and retiring bird with little song to attract our attention seems scarcely to be so common here now as at the end of last century. I have not a single note of its singing in a wild state. I have found its nest of twigs, roots and hair—never any other materials used—in furze and other bushes and hedges, with eggs as early as May 8th. It is placed from 2 feet to 5 feet above ground. Usually five, never more than six eggs are laid. In confinement, both cock and hen birds sing, and both birds display sexual emotion by moving the tail to one side or from side to side. They feed each other not only at the breeding time, but in mid-winter, but none of these habits may be indulged in by the birds when in a wild state. Though not of local interest I might here say that I have found the bullfinch to be more common in some parts of the west of Scotland than in south Britain. In west Britain, in the absence of low cover it more often frequents fir trees, feeding on the cones.

The Crossbill (*Loxia curvirostra* L.). This species has no claim to a place in this list, but the following note respecting its singing may be of interest. On April 7th, 1900, Mr. T. Roberts and I were attracted by the notes of a bird quite near to us; a sort of sharp, whistling short song. We were in a plantation of tall firs, scotch and spruce, on Flixton Carr, at the time, and soon discovered the bird seated on the topmost twig of a Scotch fir about 60 feet high. The bird continued to sit and sing a song of about four rather shrill notes. We identified it well as a Crossbill. It

was in dull red plumage, and streaks on under parts were visible. The birds head with the beak caused it to resemble a miniature vulture in its head outline. It remained for about ten minutes whilst we examined it with our field glasses.

*The Corn Bunting (*Emberiza miliaria* L.). A very common bird in summer from about April 1st, especially about grass and corn fields, but being of dull plumage and not noticeable for its song, it is scarcely known at all to any but practical field observers of birds. By the very few country people who do know it is sometimes called the mud-lark. It is most noticeable near the coast. It is comparatively scarce in winter, but whilst in the neighbourhood may be heard singing at almost any time. I have heard it on December 27th, and in summer from 3-6 a.m. until 8-50 p.m. On the hottest summer days, when most birds are silent the Corn Bunting, Yellow Bunting and Greenfinch may always be heard. Owing to its nest being almost invariably placed on the ground in grass or corn fields and although the bird is quite common within and close around the borough boundaries, its nest is very rarely found. Built late in the nesting season it is a bulky structure of straw, grass, fine roots, moss and hair. 3 to 4 eggs are laid, the weight of each being .11 oz.

*The Yellow Hammer or Yellow Bunting (*Emberiza citrinella* L.). Locally known as the Goldie, this bird is very common throughout the district at all seasons. Its bright plumage and its gay song, sang from mid-February till the end of August, are amongst the most familiar sights and sounds of the country. It seems to be especially fond of roadside banks and hedges; and walking home through the country on a summer's evening one constantly disturbs its roosting. It then comes out of the hedge and twittering, flits along before us soon to settle down again. Its nest is more frequently placed *on* the ground than *above* it in furze and other bushes, hedges and brambles, though I have found it as much as 6 feet above ground. It is bulky and composed of the same materials as used by the last named species. Very commonly only 3 eggs are laid, a less number than is usual with any other small passerine British bird. Ten eggs weigh one ounce.

The Reed Bunting (*Emberiza schœniclus* L.). Although occurring in all parts of this district from near the shore up to the higher moors, it is everywhere very scarce, even where there are reeds. It sings a short but pleasant song, but as with the songs of most other birds it is almost impossible to render it in words. The two attempts to do so that I have made and set down in my note book are so utterly unlike that it would be absurd to put them in print. The call note is like the Yellow Bunting's, but more shrill. Its nest, which may be found within the borough boundaries is made of dead grasses, moss and hair, is nearly always placed on the ground though occasionally in a hedge, tussock or osier stump. 2 feet up. I have found eggs from May 8th till June 25th. Five are laid each weighing .07 oz.

*The Starling (*Sturnus vulgaris* L.). Known to natives as the 'Gyp,' this is one of our most abundant birds at all times of the year in town or country. Huge flocks settle down in the evening at favourite roosting places, in woods, small plantations, or on ivy covered walls in early summer as well as winter. In such places, as well as on the ground, they also sing in chorus. With only a very short period of silence in summer they may be heard singing at all other times of the year. The song is a wonderful production of whistling, piping and squeaking notes, having a sort of under current accompaniment of sounds like those produced by running machinery. In addition to all these notes and sounds the starling really does 'mimic' wholly or in part the song of other birds, and the cries of some mammals. Whether this is intentional mimicry or merely the expression of the bird's own musical repertoire it is perhaps impossible to say. Certain it is that individual birds constantly repeat certain other birds' notes and that apparently *only* these individual birds

can or do repeat them. For example, on the South Cliff, Scarborough for the first time, I heard a starling mimic the call of a lapwing. Some days afterwards a brother bird observer here told me that *he* had heard a starling indulge in the same amusement. Asked where, he gave me the exact locality; that is the very same street where I also had heard almost certainly the same bird. This was also the first time that my friend had heard the lapwing call produced by a starling. Personally I have heard the following other birds 'mimicked' by the starling: the Tawny Owl, Willow-Wren, Green Woodpecker, Yellow Hammer, Blackbird, Curlew, Redshank, Golden Plover, the Canary's Chirp, and the quack of a duck, whilst every day an imitation of the human whistle may be heard. The usual nesting haunts here are holes in cliffs, quarries and trees. One I found was in a hole in a wall and only four feet above ground. The materials used I have found limited to straw, bark and feathers, but probably more substances are used. From 5 to 6 eggs are laid, each weighing $\frac{1}{4}$ oz. These are sometimes hatched by May 7th, and I have known young birds to remain in the nest till July 14th. In districts where much small fruit is grown, cherries, grapes, etc., the starling does much damage in a short time, but his usefulness during the remainder of the year more than compensates. I have watched him feeding on a lawn, digging up and swallowing grubs or worms at the rate of six in a minute. Reverting to this bird's power of mimicking the song of other birds. To-day, Dec. 2nd, 1918, I thought I heard a Willow Wren singing. It turned out to be a Starling.

The Jay (*Garrulus glandarius* L.). In spite of all efforts of the gamekeeper the Jay still inhabits the wooded parts of this district in not smaller numbers than thirty years ago. It is strange how such a conspicuous and often noisy bird escapes. Its nests which I have found on several occasions have never been more than 15 feet and sometimes but 6 feet above ground and often in mere bushes.

The Magpie (*Pica rustica* Scopoli). Another gamekeeper defier still remaining with us undiminished in numbers during the last thirty years. It is not so familiar here, however, as in the West Riding where it is not infrequently builds its nest in a city park and there finds more safety than in most rural haunts. Like the rook and the crow it is often very careless in its choice of a nesting site building occasionally within 9 feet of the ground. But when such a low position is the centre of a dense thorn bush the domed and thorny stronghold with its mud foundation is almost impregnable and quite impenetrable to a charge of shot. It is equally safe, too, in the crown of a tall larch which I have always found to be the most difficult tree to climb. 5 to 6 eggs are laid, averaging in weight 3 to an ounce. Its harsh chatter is not the only note of the magpie, which, in amorous mood says, *ee-yuck, ee-yuck* (meaning, I daresay, *yum-yum*) to its mate. I have never seen anything approaching a 'flock' of magpies, though have heard of a small 'flock' having been seen by a trustworthy observer in this district.

(To be continued.)

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Mr. E. E. Lowe writes on 'Museum and Art Gallery Finances' in *The Museums Journal* for January.

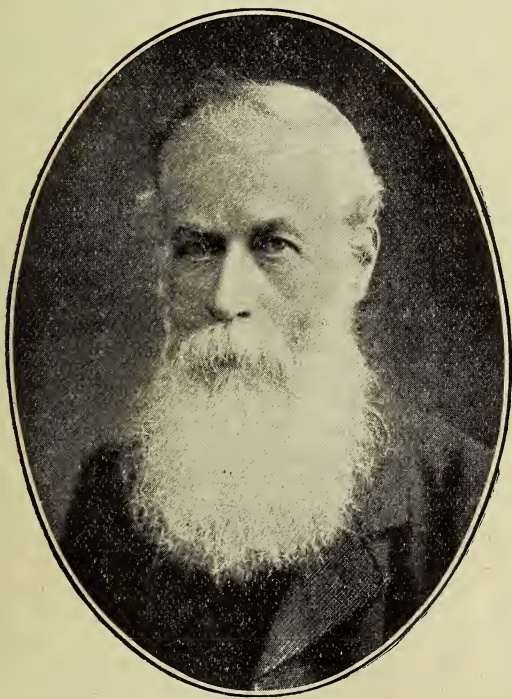
Another religious journal favours its readers with a natural history note: the *Church Family Newspaper* states, 'She watched him catch the sticklebacks which were one day to turn into frogs.'

More natural history: *Punch* tells us, 'Anemones, said a lecturer at the Royal Institution, will live as long as sixty years in captivity and are very intelligent. Nevertheless, we refuse to swallow the story about their being taught to jump through a hoop. The man who told it must have been thinking of an Egyptian king of the same name.' *Punch*, perhaps we had better point out, is not strictly a scientific journal, but humorous.

In Memoriam.

GEORGE PARKIN (1839-1918).

THE band of field-naturalists who united to form the West Riding Consolidated Naturalists' Society, and developed it into the Yorkshire Naturalists' Union, is gradually disappearing, the most recent loss being that of Mr. George Parkin, which took place on the morning of November 24th, 1918, at his residence in York Street, Wakefield. Love of Nature must



have been inherent in him, for as early as 1860 he was widely known as an ornithologist. The first number of the Yorkshire Naturalists' Recorder dated June 1st, 1872, contains 'Notes' from him 'On a few of our Summer and Winter visiting birds.' Incidentally we find that he was already a vice-president of the Wakefield Naturalists' Society. It is interesting to note that this magazine, which only lasted fourteen months, besides two other contributions from the subject of our notice, contains those of fifty-one more or less well-known names in the Natural History world, of whom not more than five survive and of

these three only, viz., Dr. F. A. Lees, S. L. Mosley and G. T. Porritt, have maintained their interest in scientific study, and deservedly occupy a prominent place amongst Yorkshire Naturalists. On the establishment of *The Naturalist* in August, 1875, Mr. Parkin was again a contributor. About this time he removed from Wakefield to Brampton in Cumberland, and our second volume contains an interesting article, 'Eleven days in Cumberland,' written by James Varley, giving an account of a visit paid to him there. Of this district he had very pleasant recollections, and his room contained an enlarged photograph of one of its beauty spots, with himself standing by the 'Kissing Stone.' The scene is described by James Varley in the article referred to. He was back again in Wakefield by 1886 and remained till death, a tower of strength to the local Naturalists' and Paxton Gardeners' Societies. Although Ornithology only has hitherto been mentioned, his choice was not confined to that branch of science. Geology, Botany, Entomology and Vertebrate Zoology all received a share of his attention, and in consequence he was an ideal companion in a country ramble. His knowledge was wide and accurate and his observation keen, and he was ever ready, indeed, anxious to place it at the disposal of his many friends and acquaintances. As a lecturer he was much in demand, his subjects ranging from varied phases of bird life to frost's fairy work, being fully illustrated by lantern slides of his own making, and usually were the outcome of some research he had been prosecuting. For he was ever at work probing into the secrets of nature. In 1917, when failing health made him more or less a prisoner at home in the care of his two devoted daughters, he succeeded in working out the ecto-parasitism of *Aleochara bilineata* on the pupæ of the cabbage root fly. It was not until he had completed his observations that he was made aware that he had confirmed the conclusions of Mr. J. T. Wadsworth, who had anticipated him by two years. As a taxidermist he had few equals. A number of his cases were exhibited on the occasion of the Annual Meeting of the Yorkshire Naturalists' Union at Wakefield in 1917, and evoked much admiration. A man of a most lovable disposition he had a large circle of friends despite the fact that he had long survived such friends of an older generation, as Thomas Lister, William Talbot, James Varley, Joseph Wainwright, Charles Waterton and Joseph Wilcock. Of these he had a fund of interesting reminiscences, and was never at a loss to blend the dead past with the living present. The writer had the privilege of spending a short time with him three days before his death and found him keenly interested as of yore in the things of Nature. A son and two daughters are left to mourn his loss, and to them we tender our respectful sympathy.—E.G.B.

WESTMORLAND COLEOPTERA.

F. H. DAY, F.E.S.

(Continued from The Naturalist for 1918, p. 391).

LAMELLICORNIA.

- Sinodendron cylindricum* L. Rydal (Black), Melkinthorpe (Britten).
Aphodius erraticus L. Melkinthorpe (Britten).
A. fossor L. Tebay (Bowman), Melkinthorpe (Britten).
A. foetens F. Rydal (Black).
A. fimetarius L. Tebay (Bowman), Melkinthorpe (Britten), Shap (Day).
A. ater De G. Tebay (Bowman), Rydal (Black), Shap (Day).
A. lapponum Gyll. Rydal (Black), Patterdale (Britten), Shap (Day).
A. constans Duft. Rydal (Black).
A. merdarius F. Tebay (Bowman), Ravenstonedale (Day).
A. conspurcatus L. Tebay (Bowman), Melkinthorpe (Britten).
A. contaminatus Hbst. Tebay (Bowman).
A. punctato-sulcatus Stm. Tebay (Bowman), Melkinthorpe (Britten).
A. rufipes P. Tebay (Bowman), Pendragon Castle (Day).
A. depressus Kug. Tebay (Bowman), Melkinthorpe (Britten).
Geotrupes typhoeus L. Cliburn Moss (Britten).
G. spiniger Marsh. Tebay (Bowman), Melkinthorpe (Britten).
G. stercorarius L. Melkinthorpe (Britten).
G. stercorosus Scrib. (*silvaticus* Pz.). Tebay (Bowman), Melkinthorpe (Britten), Rydal (Black).
Serica brunnea L. Tebay (Bowman), Melkinthorpe (Britten).
Melolontha hippocastani F. Ulleswater district (Wood).
M. vulgaris F. Melkinthorpe (Britten), Witherslack (Day).
Hoplia philanthus Füss. Tebay (Bowman).
Phyllopertha horticola L. Ulleswater district (Wood), Rydal (Black), Patterdale (Britten), Witherslack (Day).

STERNOXIA.

- Corymbites pectinicornis* L. Windermere (A. W. Rymer Roberts).
C. cupreus F. Tebay (Bowman), Ulleswater district (Wood), Rydal (Black), Patterdale (Britten), Windermere, Kendal (Roberts).
C. cupreus var. *aeruginosus* F. Tebay (Bowman), Ulleswater district (Wood), Rydal (Black), Patterdale (Britten).
C. incanus Gyll. (*quercus* Gyll.). Melkinthorpe (Britten), Witherslack (Day).
C. aeneus L. Crook, Windermere (Roberts).
Sericus (*Sericosomus*) *brunneus* L. Witherslack (Day).
Dolopius marginatus L. Melkinthorpe (Britten), Windermere (Roberts), Witherslack, Lowther Park (Day).
Agriotes pallidulus Ill. Tebay (Bowman), Melkinthorpe (Britten), Windermere (Roberts), Witherslack, Lowther Park (Day).
A. obscurus L. Tebay (Bowman), Melkinthorpe (Britten), Windermere (Roberts), Witherslack (Day).
Hypnoidus riparius F. Tebay (Bowman), Kirkby Stephen (Thompson) Windermere (Roberts).
Cryptohypnus dermestoides Hbst. Melkinthorpe, Cliburn (Britten).
C. dermestoides Hbst. var. *tetragraphus* Germ. Melkinthorpe, Cliburn (Britten).
Melanotus rufipes Hbst. Windermere (Roberts).
Elatér balteatus L. Witherslack (Day).
Athous hirtus Hbst. (*niger* Brit. Cat.). Rydal (Black), Melkinthorpe (Britten).
A. vittatus F. Melkinthorpe (Britten).
A. hæmorrhoidalis F. Tebay (Bowman), Windermere, Crook (Roberts), Melkinthorpe, Askham, Patterdale (Britten), Witherslack (Day).

- Denticollis (Campylus) linearis* L. Ulleswater district (Wood), Patterdale (Britten), Witherslack, Ravenstonedale (Day).
Trixagus (Throscus) dermestoides L. Witherslack, Lowther Park (Day).

MALACODERMATA.

- Dascillus cervinus* L. Tebay (Bowman), Rydal (Black), Askham, Patterdale (Britten), Witherslack, Lowther Park (Day).
Helodes minuta L. Melkinthorpe, Cliburn (Britten), Witherslack (Day).
H. marginata F. Tebay (Bowman), Cliburn (Britten), Witherslack (Day).
Cyphon ochraceus Steph. (*pallidulus* Boh.). Melkinthorpe (Britten).
C. paykulli Guér. (*nitidulus* Thoms.). Tebay (Bowman), Melkinthorpe (Britten), Witherslack (Day).
C. coarctatus Pk. Witherslack (Day).
C. variabilis Thunb. Melkinthorpe (Britten).
Hydrocyphon deflexicollis Müll. Melkinthorpe (Britten), Lowther Park (Day).
Podabrus alpinus Pk. Tebay (Bowman), Ulleswater district (Wood), Pooley Bridge (Britten).
Cantharis (Ancistronycha) abdominalis F. var. *cyanea* Curt. Tebay (Bowman), Ulleswater district (Wood), Pooley Bridge (Britten).
Cantharis (Telephorus) rustica Fall. Melkinthorpe (Britten), Witherslack (Day).
C. (Telephorus) obscura L. Ulleswater district (Wood), Rydal (Black).
C. (Telephorus) nigricans Müll. var. *discoidea* Steph. Tebay (Bowman), Melkinthorpe (Britten). Witherslack, Ravenstonedale (Day).
C. (Telephorus) livida L. var. *rufipes* Hbst. (*dispar*. F.). Tebay (Bowman); Melkinthorpe (Britten).
C. (Telephorus) figurata Man. Ulleswater district (Wood), Rydal (Black), Askham (Britten).
C. (Telephorus) rufa L. var. *liturata* Fall. Cliburn Moss (Britten), Witherslack (Day).
C. (Telephorus) pallida Goeze. (*bicolor* Brit. Cat.). Tebay (Bowman), Melkinthorpe (Britten), Witherslack, Kirkby Stephen (Day).
C. (Telephorus) fulvicollis F. var. *flavilabris* Fall. Lowther Park (Day).
C. (Telephorus) paludosa Fall. Rydal (Black), Askham (Britten), Witherslack (Day).
C. (Telephorus) haemorrhoidalis F. Tebay (Bowman), Cliburn, Askham, Melkinthorpe (Britten), Witherslack (Day).
Rhagonycha limbata Th. Tebay (Bowman), Melkinthorpe (Britten), Witherslack, Ravenstonedale (Day).
R. lignosa Müll. (*pallida* F.). Melkinthorpe, Lowther Park (Day).
Malthinus flaveolus Pk. (*punctatus* Brit. Cat.). Melkinthorpe (Britten).
M. fasciatus Ol. Melkinthorpe (Britten), Witherslack (Day).
M. balteatus Suf. Witherslack (Day).
Malthodes marginatus Lat. Tebay (Bowman), Ravenstonedale (Day).
M. minimus L. Melkinthorpe (Britten), Witherslack (Day).
M. fuscus Waltl. (*pellucidus* Kies.). Witherslack (Day).
M. fibulatus Kies. Melkinthorpe (Britten).
M. atomus Th. Melkinthorpe, Lowther Park (Day).
M. flavoguttatus Kies. Melkinthorpe (Britten).
Malachius bipustulatus L. Melkinthorpe, Patterdale (Britten).
Dasytes aerosus Kies. Melkinthorpe (Britten).
Necrobia violacea L. Melkinthorpe (Britten).

TEREDILIA.

- Niptus hololeucus* Fall. Tebay (Bowman), Melkinthorpe (Britten).
N. unicolor Vill. (*crenatus* F.). Tebay (Bowman).
Ptinus fur L. Tebay (Bowman), Melkinthorpe (Britten).
P. lectus Boield. Melkinthorpe (Britten).

- Dryophilus pusillus* Gyll. Melkinthorpe, Patterdale (Britten), Witherslack (Day).
Prionium excavatum Kug. (*castaneum* Brit. Cat.). Tebay (Bowman) Melkinthorpe, Patterdale (Britten).
Ernobius mollis L. Melkinthorpe (Britten).
Anobium striatum Ol. (*domesticum* Fourc.). Melkinthorpe, Patterdale (Britten).
Ochina ptinoides Marsh. (*hederae* Müll.). Melkinthorpe (Britten).

LONGICORNIA.

- Rhagium bifasciatum* F. Melkinthorpe (Britten), Rydal (Black).
Alosterna (*Grammoptera*) *tabacicolor* De. G. Melkinthorpe (Britten).
Grammoptera ruficornis F. Rydal (Black), Witherslack (Day).
Clytus arietis L. Melkinthorpe (Britten).
Liopus nebulosus L. Rydal (Black), Melkinthorpe (Britten).
Pogonochaerus hispidulus Pill. (*bidentatus* Thoms.). Melkinthorpe (Britten).
Tetrops praeusta L. Melkinthorpe, Patterdale (Britten).

(To be continued.)

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BIRDS.

Moorhen nesting in a tree.—Last May a Moorhen built its nest about two miles away in a hawthorn, quite, I should think, ten feet from the ground. All the other nests I have known have been built on or near the ground.—E. P. BUTTERFIELD.

It is not at all unusual for Moorhens to built in trees. Rarely a season passes without my finding one or more.—R. F.

Corncrake calling whilst perched in hedge.—Referring to the note by Mr. Horrox in *The Naturalist* for November, p. 361, I have never heard the call of the Corncrake whilst in flight, but I once heard one calling in the early morn, before any other bird had begun to sing. This was when I was coming from Harewood to Collingham, and by creeping quietly in the direction of the sound, I found the bird perched in a hedge and calling quite lustily.—E. P. BUTTERFIELD.

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ENTOMOLOGY.

Derbyshire Butterflies.—In the very interesting account of the butterflies of North-east Derbyshire in *The Naturalist* for January, 1919, by Dr. E. Drabble and Hilda Drabble, there is no mention of *Gonepteryx rhamni* (Brimstone). This insect certainly occurs in the district. During May, 1918, I saw this butterfly and *Euchloe cardamines* (Orange Tip), both in large numbers in Lathkil Dale. In the same dale during August, the following were noted:—*Vanessa io* (also at Cordwell, Bakewell, and in Via Gellia), *V. atalanta* (and in Via Gellia), *Pyrameis cardui* (and at Haddon), while *Chrysophanus phlaeas* and *Coenonympha pamphilus* were very plentiful. *Lycaena icarus* occurred on the hillsides above Bakewell.—J. M. BROWN, Sheffield.

NEWS FROM THE MAGAZINES, etc.

The death is announced of F. G. Aflalo, a writer on popular natural history.

The Subscription to *The Entomologist's Record* for 1919 will be 10/-, and to *The New Phytologist* £1.

The name *Trigonalyx hahnii* Spin. should be substituted for *Meliora aparamus* on p. 399 of *The Naturalist* for December, 1918.

Dr. F. W. Harmer, of Norwich, the well-known geologist, has had the title of M.A. *honoris causa*, conferred upon him by the Cambridge University.

The Fifty-seventh Annual Report of the Yorkshire Naturalists' Union, reprinted from *The Naturalist*, is on sale by Messrs. A. Brown & Sons, Hull, at one shilling.

The Kendal Municipal Museum is in need of £1000 and the Allen Trustees have promised one half the amount provided the remaining half is subscribed by the public.

'Observations on the Cuckoo,' by E. Chance; 'Notes on the Crested Lark in Northern France,' by E. A. Wallis, and 'Moult of British Waders,' by Annie C. Jackson, appear in *British Birds* for January.

Dr. Wheelton Hind favours us with a copy of his admirable paper on 'The Distribution of Carboniferous Goniatites,' reprinted from the *Geological Magazine*. It is a continuation of the work published in *The Naturalist* in 1909.

The Journal of the Quekett Microscopical Club, No. 83, contains Notes on some Intermediate Forms of *Navicula* and *Cymbella*, by Sir Nicholas Yermoloff; Two African Species of *Volvox*, by Prof. G. S. West, and 'The Binocular Microscope,' by Mr. E. M. Nelson.

Journal and Transactions of the Leeds Astronomical Society, No. 25, 39 pp. 2/-. This may be called the 'Whitnell' number, as 'so few papers being available,' the editor has included some matters in which he was personally interested, which he contributed to *The English Mechanic* and other journals.

The New Phytologist, Vol. XVII., No. 10, contains 'Developmental Forms of Marine Algae,' by Lilian Lyle; 'The Conjugation of *Zygogonium ericetorum*,' by W. J. Hodgetts; 'Botany as the Science of the Living Plant,' by W. Stiles; and 'A Voice from the Secondary Schools,' by F. B. Davies.

Mr. R. Standen writes on 'Variation and Distribution of the Marbled Beauty (*Bryophila perla* Fab.) in the Wirral,' in *The Lancashire and Cheshire Naturalist* for October; Mr. E. R. Brown writes on 'The Food Plants of *Eumorpha elpenor* L. and *Calocampa exoleta* L. and on 'Teratological Variations in Wings of Lepidoptera,' and Mr. O. J. Wilkinson 'On a remarkable colour variation of *Rumicia phlaeas* L. from Delamere Forest.

The Geological Magazine for January bears the name of R. H. Rastall as joint editor with Dr. Henry Woodward. Dr. Woodward, who is in his eighty-seventh year, has edited the journal since its commencement in 1864. Among the contents of the January number we notice Dr. C. D. Walcott (a memoir) 'The Progress of Mineralogy from 1864 to 1918,' Dr. G. T. Prior, 'The Interior of the Earth,' by Mr. R. D. Oldham, and 'Notes on Ammonites,' by Mr. L. F. Spath.

The Presidential Address of G. W. Mason to the Lincolnshire Naturalists' Union on 'Only a Micro, or some Notes on the Micro-Lepidoptera of Lincolnshire,' appears in the *Lincolnshire Naturalists' Union Transactions* for 1917, recently issued. The same publication contains reports on Entomology by G. W. Mason; Vertebrata by Rev. F. L. Blathwayt; Geology, by H. Preston; Botany, Rev. E. A. Woodruffe-Peacock, who also writes on the Snow-Frost, 1916-1917 and *Mus sylvaticus*. H. C. Bee gives a list of Lincolnshire Dragonflies; there is the Secretary's Report, and there is the usual article on the Presidents (*sic*) of the L.N.U., this time the memoir being on G. H. Caton Haigh.



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We always have enemies within our garden-gates, and would-be gardeners are often reminded that the results of their labours may be brought to nought or greatly lessened by the work of destructive insects. There are other insects, however, that are our Allies, as they live on the destructive pests and thus help to protect the vegetables and fruit. It is, therefore, most necessary to be able to distinguish between useful and destructive insects, hence the popularity of Browns' "Enemies of the Garden," as the charts show at a glance how to tell our enemies from our friends. A set of the illustrations should be exhibited in all our schools or village clubs, as the knowledge which they and their accompanying handbook convey is essential to successful gardening. The small expenditure on same will prove a truly profitable investment.

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EDITED BY

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RILEY FORTUNE, P.Z.S.



Contents :—

	PAGE
Notes and Comments (illus.):—Bootham School Naturalists; Northumberland Naturalists; Britain's Mineral Resources; Whitby Jet; East Anglian Pre-historians; Illustrations; The Report; Other Contributions; The Vasculum; Selby Naturalists; An Ancient 'Comb'; A Mammoth's Nest; One of the Fibulariidae; Origin of Flint; Essex Naturalists; A 'Crop'; Science Progress; A National Museum	81-88
Nature and Man —Prof. W. Garstang, M.A., D.Sc.	89-96
Bibliography :—Papers and Records relating to the Geology and Palæontology of the North of England (Yorkshire excepted), published during 1918—T. Sheppard, M.Sc., F.G.S. ...	97-101
Yorkshire Coleoptera in 1918 —W. J. Fordham, L.R.C.P., F.E.S.	102-104
Common Wild Birds of the Scarborough District —W. Gyngell	105-106
In Memoriam: H. C. Drake, F.G.S. (illustrated)—T.S.	107-109
Field Notes :—Birds in North West Leeds; New Yorkshire Diptera; Sibbald's Rorqual (<i>Balenoptera sibbaldii</i>) in North Wales; Vegetative Reproduction in Grasses	88, 96, 104, 109
Correspondence : Cuckoos' Eggs and Foster Parents; Former Status of the Starling; Late Stay of Swifts	110-111
News from the Magazines, etc.	112
Illustrations	85, 87, 107

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NOTES AND COMMENTS.

BOOTHAM SCHOOL NATURALISTS.

The Eighty-fourth Annual Report of Natural History, Literary and Polytechnic Society, Bootham School, York, seems to be even more interesting than usual. This School, like its Ackworth rival, is 'strong' in natural history, and no doubt we shall hear more of many of those whose names are mentioned in the reports of the various sections of the Society's work. There are reports on Archæology, Astronomy, Botany, Conchology, Entomology, Microscopy, Ornithology, etc., and some particularly valuable notes on Ancient Earthworks, with illustrations.

NORTHUMBERLAND NATURALISTS.

The Natural History Society of Northumberland, Durham and Newcastle-on-Tyne continues to issue its valuable Transactions, the substantial Part I of Vol. 5 (new series, pp. 180+lxv., 6/-) having been published. Apparently it covers the years 1913-15. Besides the Society's reports for 1913-15, E. Burnup writes on the Field Meetings during 1913; J. J. Hill, on the Field Meetings during 1914; J. E. Hull, on Terrestrial Acari of the Tyne Province (already noticed in these pages); J. W. H. Harrison on 'A Survey of the Lower Tees Marshes, and of the Reclaimed areas surrounding them'; W. Johnson on 'A Valuable Addition to the British Lichen-Flora'; and D. Woolacott 'On Sections in the Lower Permian Rocks at Claxheugh and Down Hill, Co. Durham.'

BRITAIN'S MINERAL RESOURCES.

We take the following from the valuable report of the Controller of the Department for the Development of Mineral Resources in the United Kingdom, issued at the low price of 6d.:—'The Geological Survey, now under the Board of Education, would surely be more appropriately linked with the Mines Department. That section is well organised, and has rendered very valuable service to the country. My Department is greatly beholden to Dr. Strahan and his able staff for a series of valuable maps especially prepared for its use, and for the wealth of information contained in the Memoirs. But although a good deal of scientific and in special cases research work has been done, it falls short of national needs. Too little attention has been given to economic geology, which is the practical application of the scientific theories propounded. At the inception of this Department, the work was seriously handicapped by the lack of reliable and comprehensive information respecting the mineral industry of the country. The greater part of the time of the staff of mining engineers was and is taken up in gathering it by visiting mines in various

parts of the Kingdom. This is not as it should be. The Government ought to have at its command up-to-date information as to the real position of all the different branches of the British Mineral Industry, and this subject should form a part, and by no means the least part, of the work of the proposed enlarged Mines Department.'

WHITBY JET.

In *The Quarry* for January is an extract from 'Special Reports on the Mineral Resources of Great Britain, Vol. VII., Part I.' which includes the following relating to the Whitby Jet industry:—'The Whitby Jet is embedded in a mass of shale about 25 to 30 feet thick, known as the Jet Rock. In the search for lumps of jet the Jet Rock has been mined all along its outcrop, and has been found to give off an appreciable amount of volatile matter. It contains also mineral oil in joints and in the interior of nodules and fossils. Attempts to extract oil were made at Kettleness but proved to be unprofitable. It is stated that ten gallons of oil can be extracted from one ton of shale. From experiments with Whitby jet, made many years ago, it was found that 100 grms. of jet evolve 30.2 c.c. of gas at 100 degs. (Cent.), the chemical composition of which was given as carbonic anhydride, 10.93 per cent., quartane or ethyl, 86.90 per cent., and nitrogen 2.17 per cent. In 1850 there were about 50 workshops for the manufacture of jet ornaments: in 1860 the trade realised £45,000, and in 1873 £90,000. Since then the industry has rapidly declined. In 1882 not more than three or four tons of Whitby jet were used, varying in value from £300 to £1,300 a ton. In 1888 there was said to be not more than £200 worth of Whitby jet employed in the trade annually, importation of inferior foreign jet having caused the decline.'

EAST ANGLIAN PRE-HISTORIANS.

Part IV. of Vol. 2 of the *Proceedings of the Prehistoric Society of East Anglia* (pp. 469-589, 3/6) has been issued. On account of the expense of publication the members are asked 'at least to double their subscriptions,' though personally we consider this would be unnecessary if a desirable reduction were made in some of the sketchy illustrations. For instance, one 'author' has 68 illustrations to one of his papers and 15 to another—all poor and mostly far too large, albeit all carefully initialled and dated. As a contrast we should like to refer him to Mr. Lingwood's excellent sketches accompanying Mr. Peake's paper; and they are neither signed nor dated. Figure Y on page 509 might be a tortoise, a golfer's sponge box, or a fungus; Z (B) would pass for a pear or a pipe bowl, while X (B) on page 513 might well be a view

of 'the author' when very much annoyed; few would ever guess they were flint implements, notwithstanding the arrow indicating the 'direction of blow'—in fact this suggests a weathercock.

ILLUSTRATIONS.

With the wealth of fine blocks at his ready disposal we are surprised that the address of the President is illustrated by such crude outline drawings, many of which might pass for mammalian teeth or sausages. The reproductions from photographs accompanying Mr. W. G. Clarke's papers are worthy of the Society, as also are Mr. Pickering's plates; the Rev. H. G. O. Kendell's sketches are better and not too large; Mr. Lingwood's, as already stated, are excellent, and we would suggest that in future those who at present occupy nearly a page with a bare plan of a potato should requisition Mr. Lingwood to prepare their blocks.

THE REPORT.

As his Presidential Address, Mr. Reginald Smith, of the British Museum, has a paper on 'Our Neighbours of the Neolithic Period.' Mr. Smith begins by stating that 'more is known of the remote Palæolithic period than of the later Stone Age that ended about 4,000 years ago.' Without asking for evidence of the 4,000 years, we certainly very seriously question the statement made. Unquestionably the literature dealing with the so-called pre-Neolithic periods has recently grown in bulk, enormously, but much of it is speculative and a large proportion due to the tendency of so-called 'pre-historians' to try to make many unquestionable Neolithic or even more recent discoveries, of Palæolithic or even earlier date. Some of the members of the Society under notice are the greatest sinners in this respect, and the 'literature' has often been further extended by the frequent corrections which have had to be made to these alleged 'pre-Neolithic' remains.

OTHER CONTRIBUTIONS.

Other contributions are 'Surface Implements of a Late Palæolithic Site,' by J. D. Hill; 'A Flint Implement Factory Site near Milverton, Somerset,' by C. F. Maysey; 'The Ichfield way in East Anglia,' by W. G. Clarke; 'Flint Implements from the Ploughlands of South West Leicestershire,' by A. G. Pickering; 'More about Windmill Hill, Avebury, and Grime's Graves,' by Rev. H. G. O. Kendell; 'Surface Palæolithic Implements from the Chilterns,' by A. E. Peake, and three of the usual type of paper by J. R. Moir, their titles being 'The Ancestry of the Mousterian Palæolithic Flint Implement'; 'The Flaking and Flake Characteristics

of a pre-Red Crag Rostro-carinate Flint Implement,' and 'The Fracturing of Flints by Natural Agencies in Geological Deposits.'

THE VASCULUM.

The Vasculum, Vol. IV., Nos. 1 and 2, is a very good number and several of the contents are distinct contributions to science. 'J. A. S.' contributes a Memoir on the late Professor G. A. Lebour and gives a list of his papers; and among other items we notice 'On Water Voles and Shrews,' by C. Robson; 'Primitive-tails, Spring-tails and Bristle-tails,' by R. S. Bagnall; 'Cobwebs,' by J. E. Hull; 'The Grasshopper Warbler,' by J. E. Ruxton; 'A Wensleydale Week [Botany and Entomology],' by T. A. Lofthouse; 'The Significance of Local Lists,' by G. B. Walsh; there are two papers on 'Bird-Life and the Severe Winter of 1916-17,' by G. Bolam and J. S. T. Walton; the former author also contributing 'Unusual Nesting Sites of Willow Wren and Wood Warbler.' On the cover readers are urged to get additional subscribers, while on a printed slip we learn that, on account of paper shortage, etc., the magazine 'can only now be supplied to subscribers for the Volume, and only a very few new subscribers can be added to the list.'

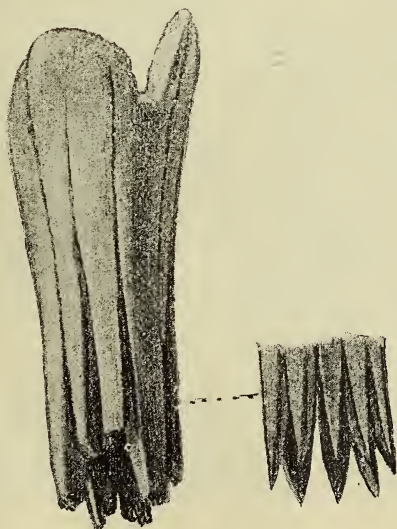
SELBY NATURALISTS.

At the recent Annual Meeting of the Selby Scientific Society, the report of the Secretary (Mr. J. F. Musham) showed that the year had commenced with a membership of 122 and had ended with 126. Two members, E. Archer and J. S. Ullathorne, had been killed while serving their King and country. The number of excursions arranged was 22, inclusive of the Y.N.U. fixtures, and with little exception these had been carried out, though with diminished attendances. The meeting of the British Mycological Society held at Selby in September last had been a success. At the excursion to Brayton Barff in June it had been decided to obtain permission to dig out the accumulation of many years from the old wishing-well, and the necessary excavation had been done voluntarily by Mr. W. Reaston and the Secretary, but had not yielded any objects of special interest. The work of the photographic section had been well maintained. It was urged that the Society should keep in close touch with the town authorities with reference to the contents of the Museum, that many of the items which are priceless as records be accorded the preservation and care which their historic association merits. The Treasurer's report shewed that the year had commenced with a balance of £4/3/8, and ended with one of £5/8/5. Not the least interesting of the Society's work is the compilation

of an album of photographic records, consisting of portraits of local celebrities and worthies of bygone years, together with copies of documents and old prints of historic interest.

AN ANCIENT 'COMB.'

Mr. H. Ling Roth, of the Bankfield Museum, Halifax, has issued for 2/6 that portion of his book on 'Yorkshire Coiners,' which deals with Pre-Historic Halifax. He has also published as Bankfield Museum Notes, 2nd series, No. XI., part 4 of his 'Studies in Primitive Looms,' which contain some useful information relating to various antiquities found in this country, which have hitherto been apparently described as 'weavers' combs.' On page 140 of this publication he



illustrates an object described as a comb for cleaning deer-skins, which is remarkably similar to an example found in a pre-historic barrow on the Yorkshire Wolds, made from a deer antler, and is illustrated in Mortimer's 'Forty Years' Researches,' fig. 727. It was found in 1870 at Garton, Yorks., and by the courtesy of the publishers we are able to illustrate the specimen herewith. Whatever the original object of this article could have been it seems pretty clear that the one figured by Mr. Ling Roth, and the Yorkshire example, are identical.

A MAMMOTH'S NEST.

In *Man* for February, Mr. J. R. Moir gives four illustrations of what we first thought was a freak potato, but apparently

it is an irregular chalk pebble, which he describes as 'a piece of carved chalk from Suffolk'; and to Mr. Moir it is a 'statue' of a mammoth, and 'the sculpturing of the head, ear, eye, trunk, and elephant-like foot is very striking, and testifies to the *skill and accuracy* of the ancient craftsman.' The dorsal view of this 'sculpture' shows the 'well-sculptured back,' etc. He also tells us that 'when the sculpture was complete and uneroded it must have presented a quite remarkable appearance.' Notwithstanding this author's 'experiments in carving chalk from the boulder clay' (*some* experiment!) we are quite prepared to wager a shilling that his statue is quite a natural and accidental lump of chalk, and as much resembles a mummy as a mammoth!

ONE OF THE FIBULARIIDÆ.

To assist his readers, the author of a paper in *The Geological Magazine* for November, gives the following summary:—*Pygastrides relictus*, Lovén, is believed to be an early post-larval stage in the development of some Irregular Echinoid. Reasons are given for the belief that this Echinoid is probably a Clypeastroid, and one of the Fibulariidæ. In view of its undoubted resemblance to the Holoctypoida, particularly to the Pygasteridæ and Discoidiidæ, *Pygastrides* is regarded as affording ontogenetic evidence of the phyletic connection of the Clypeastroida and Holoctypoida through the Discoidiidæ.

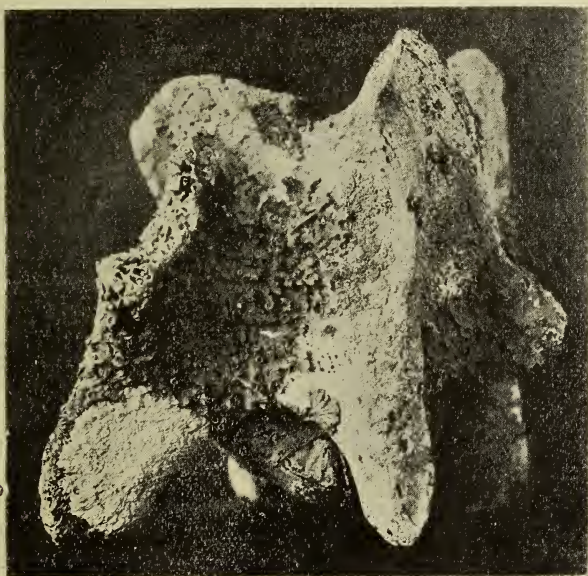
ORIGIN OF FLINT.

In *Science Progress* No. 49, Dr. A. Scott gives the following interesting summary of recent papers on this vexed question:— 'In a discussion of the origin of Flint,' E. R. Lankester (*Nature* 99, pp. 282-4, 1917) considers that it is formed at a period long subsequent to the deposition of the chalk, and that the main agent is percolating atmospheric water containing silica in solution. The colour of black flint, which is supposed to consist of minute quartz crystals cemented by amorphous silica, is ascribed to carbon. On the other hand, W. A. Tarr (*Amer. Journ. Sci.* 44, p. 409, 1917) inclines to the view that, so far as certain Lower Carboniferous rocks in Missouri are concerned, the flint has formed at an early stage, and is not a replacement of the calcium carbonate. B. Moore (*Nature*, 99, p. 324, 1917) believes that the flint is precipitated from colloidal carbonated solutions during the interaction of the calcite and the carbon dioxide to form 'acid' calcium carbonate. 'Synthetic flint,' which, however, is much less hard than the natural material, has been obtained in this way. S. C. Bradford (*ibid.*, p. 324, 1917) considers the formation due to crystallisation from gels, while G. A. J. Cole (*Geol.*

Mag. (6) 4, pp. 64-68, 1917) adopts a theory analogous to that of Liesegang, and holds that many flints are formed by the rhythmic precipitation of silica from solution.

ESSEX NATURALISTS.

Part XII. of Vol. XVIII. of *The Essex Naturalist* is, as it should be, devoted to the various 'ologies' relating to Essex, but the following contributions are of more than local interest:—
'A Short History of the Study of Mycetozoa in Britain,' and



Eight species of fertile Lichens on Vertebra of a Sheep.
Xanthoria parietina Th. Fr. most prominent. $\times 1\frac{1}{2}$.

'The Haunts of the Mycetozoa,' by Miss G. Lister, 'Notes on the Ecology of Lichens,' by R. Paulson, and 'Mosquitoes and the Danger of Malaria in England,' by A. Bacot. We are kindly enabled to reproduce one of the many interesting illustrations in this valuable publication.

A 'CROP.'

In *The Journal of Agriculture*, Vol. 25, No. 8, details are given of the contents of a crop of a Wood Pigeon, shot in Cumberland, in April, 1917. 'The crop contained about 8,000 seeds (weighing 14 grammes, after being washed and dried) of spreading Orache (*Atriplex patula*), which were all

ingested at one meal. It would seem, therefore, that the bird may sometimes be of some agricultural use.' The same *Journal* contains 'Injurious Weed Seeds in Grasses and Clovers harvested for seeds in Britain,' and 'The Common Honey Bee as an Agent in Plum Pollination.'

SCIENCE PROGRESS.

In *Science Progress* No. 50, Mr. Henry Bury writes on 'The Denudation of the Weald: A Defence of Existing Theories,' being a reply to Major R. A. Marriott in a previous issue. In the same journal Dr. W. E. Collinge writes on 'The Preservation of Game Birds and its relation to Agriculture,' and Mr. J. R. Moir replies to a criticism of one of his papers, which appeared in a previous issue. Reference had been made to the incongruous association of a bone of an elephant with others of apparently more recent date in a deposit at Ipswich, and it was quite correctly suggested that this was probably a derived fossil. Mr. Moir won't have this—quite apart from geological discrepancies which its presence makes, and considers it of the same age as the rest, in fact a 'certainty.' It is a pity he did not get the opinion of a geologist on the point.

A NATIONAL MUSEUM.

The Eleventh Annual Report of the National Museum of Wales for 1917-18, contains particulars of over 66,000 additions to the collection. Among them we notice reference to the Rippon Collection of insects and shells, the Brigg Collection of British Hemiptera, Neuroptera, etc., the 'Hoyle' collection of books and pamphlets, etc. We notice 'a pair of white rooks from Yorkshire.' As an appendix is Mr. R. A. Smith's report on his 'sixteen full days' work' on the 'Stopes' collection of Stone Implements. Personally we were disappointed with the report as we feel there was plenty of material for a much longer and more valuable account, and we know that Mr. Smith has the ability.

— : o : —

Birds in North West Leeds.—A nightjar was seen on several occasions during June and July last in the grounds of the Northern Hospital in Beckett's Park, Far Headingley, Leeds. My informant is Mrs. Perkins, one of the lady nurses, who knows the species well in their Middlesex and Surrey haunts. On Easter Day, 1918, and for some days afterwards, a pair of dippers was present on the stream in Meanwood Village—accompanied on one occasion by a grey wagtail. One evening in mid-July, 1918, a Woodcock passed over the Lawnswood Cemetery evidently on its way to Adle Dam.—JASPER ATRINSON.

NATURE AND MAN.*

 PROF. W. GARSTANG, M.A. D.Sc.

IN making my choice of a subject for this address, I hope that you will not consider it inappropriate that, instead of discussing some special topic of research, or the progress in some special department of Natural History, I propose to take up the question of Man and Nature, i.e., of the relations of man to nature, ambitious as this project may seem to be for a discussion of an hour's duration. It is true that as members of Natural History Societies we do not usually pay much attention to man, and on our excursions are perhaps only too glad to turn our backs upon him and all his works, always our companions for the time excepting, and of course our host on the approach of tea-time. But during these past four fateful years man has made himself so conspicuous on the stage of Nature and has displayed so many surprising phenomena, that if this were a meeting of the section of Vertebrate Zoology you could certainly not protest if I brought forward a paper under some such title as this: 'On some new or little-known traits in *Homo sapiens*.'

As a matter of fact, the point I want to discuss first of all is the statement which has been put forward at different times and in various countries that the titanic struggle in which we have been engaged has been a 'biological war,' a phase of the general 'struggle for existence.' It seems to me that if wars of this nature are to be regarded as a necessary part of our heritage from Nature, it is of the utmost importance that we should face and recognise the fact, especially those of us who have devoted our lives to the study of living Nature and may be reasonably expected to have some first-hand knowledge of the matters involved. On the other hand, if the statement is false, it behoves us with equal force to proclaim its falsity.

Nevertheless, although I have admitted a special motive in selecting for my address the relations between Man and Nature, the subject necessarily involves a survey of certain features of the evolutionary process which are of general interest; and this part of my subject I have attempted to approach from a point of view which I trust will add to its interest, and possibly challenge your criticism.

It will lend a personal touch to this preamble—and in the friendly circle of the Y.N.U. such personal touches are welcomed as a symbol of our intimacy—if I also confess that my thoughts were turned very early in the year towards the

* Being the Presidential Address to the Yorkshire Naturalists' Union, delivered at Leeds, December 7th, 1918.

general achievements of Natural History by a quite different set of considerations. It happens that during the year in which the Union has honoured me with the Presidency I have had to record my age so frequently on ration books, calling-up forms, and similar 'scraps of paper' incidental to the war that I have been compelled to realise that it was also the jubilee year of my own life. Whether that fact ought to have been taken by me as a reason for jubilation or not, I must admit that it turned my thoughts into reflective channels, amid which such questions as these pressed successively for an answer: 'Is it worth any man's while to devote his life to the pursuit of Natural History, apart altogether from the honours or discoveries which such devotion may bring in its train?' 'Is the study a mere eccentricity or luxury, or does it fulfil an intellectual need which no other study can replace?' 'Does it, or does it not, help a man to play his part in the world, to spend time upon the structure and habits of insignificant creatures, and to grope into the mysteries of the distant past?'

Or, on the other hand, is the naturalist who has 'scorned delights and lived laborious days' to look back upon his life with regret and dissatisfaction and to exclaim with the poet:

Alas, what boots it with incessant care
To tend the homely slighted Shepherd's trade,
And strictly contemplate the thankless Muse?
Were it not better done, as others use,
To sport with Amaryllis in the shade
Or with the tangles of Neera's hair?

Now I am quite sure that, 'homely' and 'slighted' as the pursuit of Natural History may be, you do not need from me any specific answers to these questions. I merely wish to put you in full possession of all the questions which have prompted me during my jubilee year of office to devote my address to the general topics I have mentioned.

NATURE AND WAR.

The idea that war is a natural event, that it is an essential feature of the living world, is so wide-spread that any attempt to controvert it is bound at first to appear quixotic if not disingenuous. 'Nature, red in tooth and claw,' 'the battle of life,' 'the war of Nature,'—when Tennyson and Darwin make use of such expressions as these, must we not accept them? My reply is that even men of science, to emphasise an aspect of things which is new or insufficiently recognised, occasionally resort to metaphor, and employ phrases which, when removed from their context, may convey meanings not

intended by their authors. As a matter of fact Darwin rarely uses the expressions I have quoted, and then only as equivalents of what he generally calls the 'struggle for existence.'

This term Darwin was careful not to employ without a definition. Under a special headline he says :

' I should premise that I use this term in a large and metaphorical sense, including dependence of one being on another, and including (which is more important) not only the life of the individual, but success in leaving progeny. Two canine animals in a time of dearth, may be truly said to struggle with each other which shall get food and live..... The mistletoe is dependent on the apple and a few other trees, but can only in a far-fetched sense be said to struggle with those trees, for if too many of these parasites grow on the same tree it languishes and dies. But several seedling mistletoes, growing close together on the same branch, may more truly be said to struggle with each other. As the mistletoe is disseminated by birds, its existence depends on them ; and it may metaphorically be said to struggle with other fruit-bearing plants in tempting the birds to devour and thus disseminate its seeds. In these several senses, which pass into each other, I use, for convenience sake, the general term of struggle for existence.'

Notice that the wolf is not said to struggle with its prey, but with its mates when the prey is scarce ; and that the mistletoe is not said to struggle with the apple tree, which it may kill, but with other fruit-bearing plants which are its rivals in attracting the appetites of birds for the purpose of distributing their seeds. The struggle for existence is the rivalry of one individual with another for the direct means of subsistence and for the safety of its offspring.

The question then becomes : Is war a manifestation of the struggle for existence ?

This idea, so far as the recent war is concerned, has been more directly expressed by speaking of it as an 'economic' war ; but from our present point of view both terms are meant to imply that the war was based on the conditions of life itself, and was a struggle between rivals for the limited means of subsistence. Probed in this way, is it not clear that the whole idea is false ? I do not suggest that biological (or economic) wars have not occurred in the past history of mankind, or that they may not occur again ; but there is all the difference in the world between a war provoked by a prosperous nation, or by a group of prosperous nations, and the invasion of a thriving country by people goaded by famine or groaning under harsh and excessive toil. Let us note in passing that, organised as men are to-day in states with defined boundaries, war means invasion ; that no invasions on account of famine,

or threatened famine, have taken place in civilised countries for centuries ; that international commerce provides a means of redressing any inequalities in the natural distribution of food-stuffs and other necessities, which renders war for this purpose futile and superfluous ; and that when in a given state famine or threatened famine supervenes, the uprising of the people which results takes the form of a revolution against the system of government rather than of a war against some inoffensive neighbour.

There is, however, another view of the question under which even wars of aggression might conceivably be held to be 'biological.' The illustration from the animal world is the so-called war of the carnivore on the herbivore, as exemplified by the lion and the antelope, the stoat and the rabbit, and so on. This is the aspect of nature to which Tennyson's phrase 'red in tooth and claw' refers ; but again you will notice the wide discrepancy between such phenomena and the wars of mankind. The latter are concerted movements of masses of men against one another, which, as we have seen, have little or no relation to matters of food-supply (while wars of cannibalism will hardly be invoked by the hardest advocate of 'biological necessity'). The relations of carnivores to herbivores on the other hand involve a special kind of adaptation which is the very condition of their existence. This relationship also is not war except in a metaphorical sense, and if common practice justifies its treatment as a 'kind of war,' it is one which is not parallel to international wars but to the raids which man makes daily upon fishes, birds and beasts for his sustenance.

As a matter of fact, we should be much nearer the truth in saying that the struggle is carried on in the living world not by war but by industry ; and the progress which results is attained not by direct assault upon a competitor but by development of special and more efficient methods. The real 'biological war' among predatory species is not illustrated by their raids on the herbivores, but by the tendency of the carnivores to specialise among themselves in their methods and objects of attack. It is the competition between carnivore and carnivore which is the biological necessity in their case, and that is pursued not by the carnivores tearing one another to pieces, but by each carnivore independently doing his utmost with the means at his disposal. With them, as with mankind, there is no need to fight over their meals, since their food is always plentiful though locally unequal ; but it requires increasing industry and activity to get it, as the prey becomes more alert and wary on the one hand, or the ground becomes less productive on the other.

The case is not altered if we turn our attention to the social animals. The wasp and the bee live in highly organised communities; the one is predatory, the other purely vegetarian. There would be nothing anomalous if the wasp were to prey upon the bee, but if the wasp ever has tried that game, she has probably learned wisdom by experience. Nor does one family of wasps attack another of the same species—the only competition between them, and it is a very real one, is in the industry with which they seek out their instinctive prey, and in the degree of harmony and co-operation with which, in each family, they share their indoor and outdoor duties.

Some of the ants, alone in the animal creation, share some of the vices of humanity in their wars and slave-raids; and I am strongly inclined to think that the causes are the same in the two cases, not dearth of food, but sheer aggressiveness and bombast, the result of over-success in the real battle of life.

In any case the disciples of Nietzsche and Bernhardt might well take warning from the history of these normally industrious and successful little creatures. The Superman who was to be the product of German wars, Kultur and World-empire has already been anticipated by the super-ant as a product of militarism, slave-making, and excessive success; but unfortunately for German theory this miserable creature is nothing but a decadent breeding monarch, unable to wash her own face or take her own food, so feeble in energy that she cannot move without the assistance of her slaves. She has lost the power of producing workers of her own, and she is too feeble even to make slaves though she lives in the midst of them as a kind of parasite. She retains all the outward signs, but none of the reality, of royalty, ruling, or appearing to rule, merely by the survival of a tradition; and obviously destined to an ignominious extinction at the first touch of adversity.

[Quotations were read here from Lubbock's '*Ants, Bees and Wasps*,' *Int. Sci. Series*, 1882, pp. 79-86, on the slave-raids and habits of the Ants mentioned below].

Here is Lubbock's summary of the effects of aggressive war and slave-making on four European tribes of Ants:

At any rate, these four genera offer us every gradation from lawless violence to contemptible parasitism. Formica sanguinea, which may be assumed to have comparatively recently taken to slave-making, has not as yet been materially affected.

Polyergus, on the contrary, already illustrates the lowering tendency of slavery. They have lost their knowledge of art,

their natural affection for their young, and even their instinct of feeding ! They are, however, bold and powerful marauders.

In *Strongylognathus* the enervating influence of slavery has gone further, and told even on the bodily strength. They are no longer able to capture their slaves in fair and open warfare. Still they retain a semblance of authority, and, when roused, will fight bravely, though in vain.

In *Anergates*, finally, we come to the last scene of this sad history. We may safely conclude that in distant times their ancestors lived, as so many ants do now, partly by hunting, partly on honey ; that by degrees they became bold marauders, and gradually took to keeping slaves ; that for a time they maintained their strength and agility, though losing by degrees their real independence, their arts, and even many of their instincts ; that gradually even their bodily force dwindled away under the enervating influence to which they had subjected themselves, until they sank to their present degraded condition—weak in body and mind, few in numbers, and apparently nearly extinct, the miserable representatives of far superior ancestors, maintaining a precarious existence as contemptible parasites of their former slaves.'—Op. cit. pp. 88-89).

There are many morals to be derived from this extraordinary chapter of Natural History. But those of us who study Nature, not merely as a diversion, but in order to gain guidance from the laws of life, may feel confident that the Germans themselves, when they have recovered their senses, will have reason to thank us for teaching them a sharp lesson, in time to save them and humanity from a headstrong rush along the wrong road of evolution.

I hope I have not wearied you by this elementary discussion and this survey of well-established facts. But the life of humanity has endured a severe strain during the past four years, and it behoves every good naturalist to attack at once and sharply any pretentious phrases which gain currency to put a biological gloss upon the causes of this conflict. We have seen that the attempts to trace the outbreak of this war to 'biological necessity,' are absolutely devoid of foundation. The biological struggle for life is a struggle for sustenance, and not the struggle for dominance of a well-fed and prosperous community. The animal world has progressed by industry rather than by fighting ; and in the only cases of organised warfare and aggression among social animals the ultimate result has been shown to be one of wholesale degradation and imbecility.

It is to be feared that Prussian eulogies of war, like those of Bernhardt, must have derived much of their success in

Germany from their appeals to popular misunderstandings of the real meanings and nature of the biological struggle for life, and the danger is not ended by the termination of the war. I have met a good number of people who, after reading Bernhardt, have remarked that, after all, the struggle for existence is universal, and it is only natural that a nation should choose its own time for a fight. We cannot overestimate the subtle danger that lurks in half understood or wholly misunderstood phrases and catch-words—those ‘idols of the market-place,’ against which Bacon warned us so earnestly, and to which the crowd is ever liable, especially in these days of hasty writing, rapid reading, and inadequate reflection.

II. THE SUPPOSED CRUELTY OF NATURE.

HAVING begun with the subject of war and the struggle for existence, I propose to devote a few words to the supposed cruelty of Nature’s methods, upon which, as upon the former subject, I am convinced there is a great amount of misapprehension. Although the matter is only a side issue of my theme, a brief discussion of it seems natural at this point, and will form something of a bridge towards the later portion of my address.

We have seen two aspects of living Nature in which the element of cruelty may conceivably enter—the struggle for existence, which affects all living things, and the special case of the carnivore, whose life involves the death of its prey.

Now with regard to the first of these it should be remembered that the ‘struggle’ is not a conscious struggle, as this unfortunate term almost implies. As we have already seen, the word is employed in a purely metaphorical sense, to account for the fact that one animal or plant attains maturity while another fails to do so. This is an everyday observation, and the life of the animal or plant is in no wise affected by our speculations as to the cause of the fact. Darwin calls life a struggle simply because the results of variations in the powers and endowments of different individuals are like the results of a race: the individuals which possess any advantage must tend to come off best on the average. But this average is one which has to be counted over many generations and in most cases over thousands of years at least. No naturalist carefully examining hedgerow and thicket ever sees any signs of this particular ‘struggle’ except in the marvellous industry and adaptations of animals, in the equally nice adaptations of plants. He will find a prosperous colony of burrowing bees on one sunny slope, and a less prosperous colony on a less favoured bank. But the latter are going about their

affairs quite unconsciously of the advantages of the former; and if some of them discover in time that they have made a mistake, they merely set to work to find a better spot. Of course now and again there is a little friction, as for example when two pairs of sparrows decide upon the same nesting site. They exchange words, like their betters, and may come to blows, but usually one pair finds discretion the better part of valour and retires to seek another hole. That any animal worries itself with harrowing thoughts about what will happen to it if it is not the fittest to survive, every field naturalist knows is not the case. They are not philosophers, but children of the sunshine and the daily task; and when bad times come—well, death comes to all sooner or later, and is all the kinder to them in coming as a rule both rapidly and unconsciously. We must not forget, moreover, that Nature's selective method, though at variance with modern human sentiment for the infirm or afflicted, spares her creatures all the accumulations of suffering which humanity has created by sheltering the unfit and the diseased, thus lowering, in effect, the standard of vigour and vitality, and introducing into the everyday life of man elements of pain and susceptibility to pain which to animals in a state of nature are quite unknown.

On this matter, in both its aspects, I agree absolutely with Wallace, to whose chapter on 'The Ethical Aspects of the Struggle for Existence' I need merely refer ('Darwinism,' pp. 36-40).

(To be continued).

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New Yorkshire Diptera.—Whilst looking over the mosses growing in a springhead on the flank of Moughton Scar in the bright sunshine of January 18th, numbers of small midges were seen making short flights from moss to moss, the specimens collected were *Orthocladus albolincatus* Mg., apparently not previously recorded for Yorkshire. In some books there is the statement that this species frequents shallows in spring but the time is much too early for this; the only flowers seen were *Daphne laureola* a mile away from the place.

Not far away on January 25th, on turning over the skin of a dead hedgehog, scores of minute flies ran or hopped into holes and under the vegetation; they were presumed to be Phoral, but are *Limosina crassimana* Hal., another addition to the Yorkshire lists. On this day a celandine was seen in flower near Long Preston. Mr. J. H. Ashworth kindly examined the diptera with me and agreed with the identification.—CHRIS A. CHEETHAM.

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(To be continued).

YORKSHIRE COLEOPTERA IN 1918.

W. J. FORDHAM, M.R.C.S., L.R.C.P., F.E.S.,
Rubwith.

THE following report on the work accomplished by coleopterists in Yorkshire for the year 1918 is happily the last which is the result of collecting under war conditions. It contains seven additions to the county list, thus bringing up the total number of new species for the years 1915-18 to seventy, a very pleasing accession to the coleopterous fauna, and containing many extremely interesting insects. It is to be hoped that as more normal conditions become established, more workers may enter the field of Yorkshire Entomology and help to fill up the many gaps that exist in our knowledge of the beetles of the county. The distribution of common species is not thoroughly worked out, and the writer would be grateful for lists of such species from any part of the county. It is well within the knowledge of all coleopterists that a species which is generally accounted common may, for some reason at present unknown, be absent or extremely rare in any particular area. Mr. J. W. Carter writes that *Bembidium biguttatum* F. has not yet been observed in the Aire Valley, and this is a generally common insect all over the Kingdom—many examples also might be given from any other area in Yorkshire. In particular more records are required for v.c. 65, as this area has not been worked as assiduously as others, and if any entomologist would collect the beetles in this district and forward them to the writer he would be helping considerably to further our knowledge of the county distribution, and such records would swell the number required before a detailed history of Yorkshire beetles can be compiled. To avoid needless repetition, any records published in *The Naturalist* for 1918 have not been included, but it may be noted that many of the species recorded as the result of the Yorkshire Naturalists' Union excursion to Barnard Castle are new to v.c. 65.

As usual the asterisk (*) indicates a new vice-county record, and the dagger (†) a new comital record.

Mr. E. G. Bayford notes that *Pterostichus madidus* F. is increasingly common near Barnsley and is by far the commonest beetle in the district. *Carabus nemoralis* Müll. is also increasing. This used to be very much less common in the immediate district than *violaceus* L. (Mr. Bayford can go back thirty-five years), but in 1918 was quite equal in point of numbers. Thirty years ago, and for the following six or seven years, *nemoralis* was the more frequent of the two near Wath (seven miles from Barnsley). *Gibbium psylloides* Czemp. (*scotias* F.) is thoroughly established in a confectioner's shop at Barnsley and occurred from May 25th to September 20th.

Mr. J. W. Carter records the capture of *Bembidium atrovioleaceum* Duf. (*stobnoides* Dej.) fairly commonly at Seven Arches, near Saltaire (*63), but local. Mr. Carter's previous record of this species from the district was

in v.c. 64. *Amara bifrons* Gyll. was taken at Sunnysdale, near Keighley, (*63), in April, by Mr. Beanland. *Gastroidea viridula* De G. occurred commonly to Mr. R. Butterfield at Morley on *Sisymbrium alliaria*. In Bingley Woods, in June, Mr. Carter took *Rhynchites nanus* Pk. commonly on young birches, together with *Rhamphus pulicarius* Hbst. (*63). At Malham, at Whitsuntide, Messrs. Carter and Haxby took among other interesting species *Amara ovata* F. (*64), a few *Lesteva luctuosa* Fauv. and all British species of *Elmis* (except *Riolus nitens* Müll.).

Mr. E. C. Horrell supplies the following records made by Leeds coleopterists in 1917:—*Bembidium atrovioleaceum* Duf., Boston Spa (C. W. Horrell).

Rhagonycha lutea Müll. (*fuscicornis* Ol.) (*64), *Malthodes dispar* Germ., *Apion aethiops* Hbst. (*64), and *A. violeaceum* Kirb. var. *†obscurum*. Boston Spa, J. D. Firth.

Pterostichus anthracinus Ill. (*63), and *Bembidium Clarki* Daws. (*63). Ryhill, J. D. F.

Calathus micropterus Duft. (*64) and *Ocys 5 striatus* Gyll. Timball, C. W. H.

Cantharis paludosa Fall. Adel, J. D. F.

Podabrus alpinus Pk. ab. *rubens* F. Harewood, A. E. Thornes.

Bradycellus collaris (*64), *Philonthus umbratilis* Gr. (*64), *P. ventralis* Gr. (*64), **P. quisquiliarius* Gyll., *Cryptophagus scanicus* L. var. *†patruelis* Stm. Adel, C. W. H.

†Ocyusa picina Aubé, *†Trogophloeus halophilus* Kies., *Atheta parva* Sahl. var. *muscorum* Bris. (*64). Collingham, C. W. H.

Corticaria fulva Com. (*64), cellar, Leeds. S. Matthewman.

Notiophilus rufipes Curt. (*63), Armley, A. E. T.

Orchesia micans Pz. (*64). Roundhay, J. D. F.

Mr. M. L. Thompson supplies, among other records (see *The Naturalist*, 1918, p. 228), the following:—

Tachinus proximus Kr. Thornton Dale, September, in decaying fungi.

Lathrobium multipunctum Gr. Sandsend, July, in moss.

Acidota cruentata Man. Eston, October, one among felled Scotch firs.

Rhizophagus ferrugineus Pk. (*62). Kildale. May, Scotch fir.

Pselaphus heisei Hbst. Kildale, May, moss.

Laria (Bruchus) rufimana Boh. Kildale, May, on whitethorn. (An interesting habitat for this cosmopolitan species, which is usually associated with beans and considered an importation).

Trachyploeus bifoveolatus Beck. (*scaber* Brit. Cat.). Sandsend, July.

†Pissodes notatus F. Kildale, May; one on Scotch fir.

Magdalis ruficornis L. (*pruni* L.). Ingleby, June, and *Hylastes ater* Pk., Kildale on pine.

Mr. G. B. Walsh records the following species from Askham Bog:—*Berosus affinis* Brul. (*64), *Noterus clavicornis* De G. (*sparsus* Marsh) (*64), *Hydrothassa aucta* F., *Phyllobrotica 4 maculata* L. (a dark form with basal spots confluent) on *Myrica* (*64). *Anisosticta 19 punctata* L. (*64), *Galerucella griseocens* Joann. (*sagittariae* Brit. Cat.), *G. calmariensis* L. (*64), and *Nanophyes marmoratus* Geoze (*lythri* F.) (*64).

Mr. Walsh also reports *Cercyon terminatus* Marsh, from Bubwith (*61) and *Pria dulcamaræ* Scop. from Selby (*64).

Mr. Rosse Butterfield has taken *Quedius rufipes* Gr. near Keighley with the ant, *Myrmica laevinodis*; and with *Formica rufa* at Crimsworth, the following:—*Oxyptoda formiceticola* Mark, *O. haemorrhoea* Mann., *†omaola talpæ* Heer. (*parallela* Mann), *Zyras (Myrmedonia) humeralis* Gr., *Thiasophila angulata* Er., and *Notothecta flavipes* Gr. All the above are new vice-county records.

Mr. W. Falconer (together with Mr. S. L. Mosley) has found *Attelabus nitens* Scop. (*curculionoides* L.) in several woods near Huddersfield, the rolled leaves being very abundant in June. He has also furnished the

writer with specimens of beetles taken during his spider hunts, and while there are several interesting species there are no new V.C. records.

Mr. J. F. Musham has taken *Anaglyptus mysticus* L. on *Viburnum* at Brighton, near Bubwith (*61), and *Cryptophagus lycoperdi* Hbst., at Staynor Wood, Selby, in *Scleroderma* (*64).

Mr. A. E. Winter of Scarborough writes that *Carabus violaceus* L. was abundant under hay and in corn fields at Seamer; *Silpha opaca* L., in great numbers on mangold wurzels at Seamer on June 29th and following days, and a colony of *Siagonium 4-corne* Kirby occurred under elder bark on Deepdale Golf Links.

The writer has received a list of specimens taken in the neighbourhood of Catterick Camp in the autumn by Mr. B. L. Cumming (Lieut., R.G.A.) and verified by Mr. E. C. Bedwell, which includes the following:—*Carabus nitens* L., not uncommon in one or two restricted areas on the moors; *Miscodera arctica* Pk. (*65), one only on moors; *Calathus micropterus* Duft., *Pterostichus adstrictus* Esch. (*vitreus* Dj.), exceedingly abundant in restricted areas; *Quedius boops* Gr. (*65); *Aphodius lapponum* Gyll., black form only; *Hylesinus crenatus* F., in ash log; *Xyloterus domesticus* L. (*65) *Rhinosimus ruficollis* L. (*65), *Tetratoma fungorum* F., and *Rhizophagus dispar* Pk. (*65). From a beech stump.

For the Bubwith district the writer can report that flood refuse in January was very prolific in commoner species. Mr. J. H. Keys found one specimen of the rare †*Platystethus nitens* Sahlb. in a sample of refuse sent to him and Mr. G. B. Walsh again found *Atheta debilis* Er. and *A. britteni* Joy. in good numbers and a few *Trichopteryx fratercula* Matth. Moles' nests were disappointing owing to the wet state of the ground—only one specimen of *Oxygona longipes* Muls. occurring. †*Bembidium doris* Pz. occurred in a marsh; one specimen only.

Dytiscus circumcinctus Ahr., was taken in a tub at Thorganby, an extension of its range in the Derwent Valley.

†*Molophilus minor* L. (a single specimen), was taken at Escrick in May by sweeping umbellifers by a hedge near a wood containing larch, spruce and fir, together with some deciduous trees.

Pogonocerus hispidulus Pill. (*bidentatus* Th.), on a gate at Ellerton.

Longitarsus atricollis L. Bubwith, on *Radicula* in the Ings (*61), and *Magdalis ruficornis* L. (*pruni* L.) (*61), on plum tree at Bubwith.

It will be seen from the preceding report that the Coleoptera Committee is indebted to several gentlemen who are not members for records, and their help is hereby gratefully acknowledged.

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Sibbald's Rorqual (*Balænoptera sibbaldii*) in North Wales.—Last September when staying at Barmouth I noticed in the shop of Mr. Davies, fishmonger, a very large Whale's vertebra. He told me that it had been cast up by the sea about 20 years ago. It measures 13 inches across the disc, and the upper process 9 inches. I submitted a sketch and details to the British Museum, and the authorities there think that it is a lumbar vertebra of Sibbald's Rorqual. This is the largest of existing animals and has, I believe, never before been recorded in Welsh waters.—H. E. FORREST.

COMMON WILD BIRDS OF THE SCARBOROUGH DISTRICT.

W. GYNGELL.

(Continued from page 74).

*The Jackdaw (*Corvus monedula* L.). Absent from some inland parts of our district this is a most abundant local bird, being especially in evidence on the higher cliffs, about tall buildings in town, and everywhere associated with rooks in flocks in the fields or at roosting sites, the two species seeming always to be very friendly. The nest here is nearly always in a hole or crevice, sometimes yards deep, in cliff, quarry or tall building, rarely in a tree hole. Like the rook it usually nests in colonies. Sticks in enormous quantity, barrow loads occasionally, are carried into Church towers. I have seen a pile of sticks five feet high on the belfry stairs of a parish church necessitating the use of a short ladder to enable the sexton to climb over it before he could reach the bells. Occasionally the Jackdaw *plays at nest building* in autumn. Once on November 22nd, I saw a demoralized bird pulling sticks out of a rook's nest. Dead sticks picked up anywhere are used for building, though sometimes like the rook, this bird will snap living twigs from a tree. The nest is lined with grass, dead leaves, wool, hair, strips of bark and paper. Although nest building may commence as early as March 18th, I have not found eggs before April 23rd. Young may be found in the nest as late as June 19th. Eggs weigh from .38 to .42 oz.; usually 5 is the number laid. I have never found more than 6 in a nest. The Jackdaw excels as an acrobat. I have seen one perch on the central vertical point of a 4-point lightning conductor.

The Carrion Crow (*Corvus corone* L.). More an outlaw than other members of the family the black crow chiefly haunts the smaller woods of the wilds especially those in moorland ravines north and westwards. Here it nests chiefly in tall trees though occasionally in holly or hawthorn bushes not more than 10 feet above ground. Even when a tall tree is selected the higher branches are not always chosen to support the nest which may be on a low lateral branch. I have found nests in alder, willow, larch, hawthorn, holly, spruce and scotch fir. The materials used are sticks, heather-stems, roots, bark, peat, string, feathers, wool and hair. Often only 4, usually 5 eggs are laid. I have found them well incubated by April 20th and with young on April 30th. Eggs weigh from .60 to .70 oz. 21 per cent. of them are chiefly marked on the small end. Not unfrequently last year's old nest is re-lined and used again. On two occasions I have heard of snail shells having been found in or below crow's nests, but have not been able to find out what species of snail the birds had used, for food, I presume.

The Hooded Crow (*Corvus cornix* L.). Locally called the Norwegian Crow, this winter migrant arrives here sometimes as early as September 1st, and remains as late as May 10th. It has never been known to breed in the district. I have found its nest in Scotland, made of heather stems, birch twigs and moss and containing eggs by April 23rd. Usually 5 only, once 6 in a nest. The following notes illustrating individuality of behaviour I copy direct from my note book. 'Found a nest near Cork April 30th, 1893, but although the nest then contained neither eggs nor young, the pair of birds swooped down at me threateningly when I climbed up to it. Another nest found near Appin, N.B. contained two fat young ones, but in this case the parent birds flew from the nest and right away before I got near the ravine in which it was built, and did not come near whilst I climbed the tree. Not choice in its food I have seen it feeding on a dead pig's head on one occasion and on turnips at another time, whilst

nothing seems to come amiss that it may find in animal life on the sea shore which it very regularly frequents here. While with us the Hooded Crow is more generally distributed throughout our district and comes closer to town than the all-black species.

*The Rook (*Corvus fugilegus* L.). By far the most abundant member of the Corvidæ throughout this district. It is more often called crow than rook. In the breeding season, regularly inhabited nesting colonies, some of enormous size, are to be seen from the immediate neighbourhood of the coast all through the inland portions of our district. On some large estates every wood seems to be occupied whilst trees from the hawthorn 12 feet high to the tallest elms and larches may be selected to bear the bulky nests. Where these have been added to and repaired year after year they may be as much as 4 feet in height and 3 feet in breadth and perfectly capable of bearing the weight of a 9-stone man sitting on the nest whilst a strong breeze is blowing. They are made of sticks outside, twigs of beech, willow and elm and lined with moss, grass, feathers, dead leaves and occasionally horse-dung. Whilst the crow's nest is almost invariably lined with wool, the rook never, in my experience, uses it. The nests are usually, but not always, well built. I have known one to tilt over and spill the eggs. Sometimes a nest may be deserted one year and re-occupied unrepaired the next year. I have known a rook to build its nest and rear its young in a perfectly dead tree in a garden. Almost invariably when building the rook pulls living twigs from trees apart from those of the rookery. Few nests survive the winter gales. In our town rookery, 12 nests only out of 200 survived the winter of 1903-4, which was not noticeable for severity. I have counted 30 nests in one tree. Nest building properly so-called may commence as early as February 18th, enthusiastic birds working all day, sometimes until it is quite dark. Eggs may be found as early as March 24th and there may be young in the nest as late as June 16th. Usually 4, less often 5, rarely 6, eggs are laid. The weight varying from .53 to .60 oz. About 10 per cent. of the eggs are chiefly marked at the smaller end. When, as usual, the cock bird feeds the hen on the nest, the sound of her gobblings leads the inexperienced to suppose that young are being fed weeks before they appear. That the brooding bird is well looked after is evidenced by the numerous little pellets of undigested *corn* mixed with small stones, that are *always* to be found under the rookery trees at breeding time, damning evidence of the birds' tax upon the farmer. I have found such pellets in our town rookery from March 24th until August 16th. Once I saw a cock bird, as early as January 22nd, pick and eat a number of elm tree buds and then after regurgitating, feed his mate with them. Rooks seem to *hold meetings* about their nests every autumn, when there is a good deal of cawing, bobbing and tail-flirting. Apparently they claim and inspect their nests, very rarely they carry in and adjust sticks. I have seen such gatherings of rooks in different years from September 23rd till December 12th. Occasionally in and out of the nesting season (on April 8th, 1900, for example), rooks fly round in the air together in circles. I have seen scores so desporting together. The rook is the largest bird that I have seen perching on a telegraph wire. It does so quite regularly. When a mixed flock of rooks and jackdaws are flying together the latter birds may be easily distinguished at a distance by the more rapid beat of their wings and by the cock and hen birds flying more closely together in pairs. The wing beats of a flying rook are about 200 per minute. Even in the same district and in the same year the breeding time differs in different rookeries. I have known a colony of birds that occupied a small exposed plantation near the edge of the sea cliffs to hatch their young ten days earlier than those in a sheltered valley inland.

(To be continued).

In Memoriam.

H. C. DRAKE, F.G.S.

(1863-1918.)

It seems strange that certain glorious geological districts, which have been the collecting grounds of many of our leading geologists, should in time remain almost neglected. Such an instance occurred some years ago in the Scarborough area, where the fossil remains in the various Oolitic strata, and the geological and physiographical problems demanded the at-



tention of Smith, Phillips, Bean, Williamson, Hudleston, Fox-Strangways, and a host of others, and then, for a time, no one seemed to carry on the work. It was with peculiar pleasure, therefore, that, somewhere about twenty years ago, a party of Hull geologists, including the present writer, called at a chemist's shop at Scarborough, and made the acquaintance of Mr. H. C. Drake—at first reticent and retiring, but it was soon evident that he was a keen palæontologist, and he showed us a magnificent collection of fossils from the rocks of the Scarborough district, which he knew so well.

Previously he had been in Leicester, and had made extensive collections from the Oxford Clay, Lias and Rhætic, many interesting specimens from which he left behind in the Museum at that place. He was particularly interested in the vertebrates, and was fortunate in securing fine series of saurian

and fish remains from the Scarborough area, though he made a good general collection, which was especially rich in Ammonites.

Eventually his business brought him to Hull, where he soon associated himself with the local scientific societies. He also took a keen interest in the Hull Museum, assisted in the cataloguing and arranging of the geological specimens there, and presented several hundred valuable specimens to the collections. These included several fine series of Peloneustes, Cryptocleidus, and fish remains from the secondary rocks, which occupy a number of cases in the Museum. While at Hull his ability and zeal as a collector considerably added to our knowledge of the vertebrate remains from the chalk, especially in North Lincolnshire. He was also able to make additions to the list of the molluscan remains of the secondary and recent rocks.

Eventually he returned to Scarborough and continued his collecting there with renewed vigour, securing many rare Cephalopods from the Cornbrash and other rocks. The reports of the Scarborough Philosophical Society show that he gave much assistance to the geological department of the Museum, and associated himself with the Scarborough Field Naturalists' Society. He was a Fellow of the Geological Society of London, and a member of the Palæontographical Society. He sent Dr. A. Smith Woodward much material for the latter Society's Memoirs, and he enriched the national collections at the South Kensington Museum by a number of specimens. It was with difficulty that he could be persuaded to write accounts of his discoveries, yet he spent a considerable amount of time in making himself familiar with palæontological literature and in writing papers of general interest for the societies to which he belonged, and in preparing lists of fossils. He was fifty-five years of age.

He will be much missed by Yorkshire geologists, all of whom will join us in extending every sympathy to his widow and young child,

The following is a list of his publications:—

Geological Rambles. *Trans. Leicester Lit. and Phil. Soc.* N.S. IV., 1898, pp. 467-474.

Cornbrash Fossils from North-east Yorkshire. *The Naturalist*, Feb 1906, p. 60.

Remains of Gyrodus from the Coral Rag of East Yorkshire. *Trans. Hull Sci. and Field Nat. Club*, Vol. III., pt. 4, 1907, p. 290.

Spiders New to the Scarborough District. *The Naturalist*, August 1908, p. 299.

Remains of a Chimaeroid Fish from the Coral Rag of North Grimston. *The Naturalist*, May 1909, p. 196.

Palaeontology in East Yorkshire, etc., in 1908. *Trans. Hull Sci. and Field Nat. Club.*, Vol. IV., pt. 2, 1909, pp. 85-869.

[With T. SHEPPARD].

Catalogue of specimens in the 'Lether' Collection, and of the

Naturalist.

Cornbrash Fossils in the Hull Museum. *Trans. Hull Sci. and Field Nat. Club*, Vol. IV., pt. 2, 1909, pp. 71-80, and reprinted in the *Hull Museum Publications* No. 58.

Asteracanthus in the Yorkshire Cornbrash. *The Naturalist*, April, 1910, pp. 141-142.

[With THOMAS SHEPPARD).

Classified List of Organic Remains from the Rocks of the East Riding of Yorkshire [a list of all the known records from the Lower Lias to the post-glacial series of East Yorkshire; with Bibliographies]. *Proc. Yorks. Geol. Soc.*, Vol. XVII., pt. 1, 1909 [publ. 1910], pp. 4-71.

Asteracanthus in the Coralline Oolite [at Seamer]. *The Naturalist*, March, 1911, p. 130.

Report for Geology, 1910 [Scarborough District]. *Ann. Rep. Scarborough Phil. and Arch. Soc.* for 1910 [publ. 1911], p. 31.

Report for Geology, 1911 [Scarborough District]. *Ann. Rep. Scarborough Phil. and Arch. Soc.* for 1911 [publ. 1912], pp. 30-31.

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T. S.

Vegetative Reproduction in Grasses.—Mr. Falconer's note of his finding of a viviparous example of *Cynosurus cristatus* L. at Wilberlee (*The Naturalist*, December, 1918, p. 380) is interesting. On looking through my collection of grass plants I find a panicle of *Dactylis glomerata* collected at Newsome (altitude 550 feet) showing the curious suppression of seed formation spoken of as vivipary. That exceptional conditions of moisture have their effect on the vegetative organs of grasses is further evidenced by an interesting form which I noted when passing over Clowes Moss, Marsden (altitude 1100 feet) in August last. Across this moor many subsidiary streams have cut their way through the peat to the rock bed below. A not uncommon species of the drier knolls of the banks of these streams is *Deschampsia flexuosa*. By the side of one of these streams this particular grass was dominant down to the waters edge, having worked its way by numerous offsets into the newly-deposited sandy silt, firmly binding it together. From the intra-vaginal buds in this compact mass arose numerous stems with shortened internodes, whilst from the nodes, which were considerably swollen, arose either fully developed or developing grass plants, having foliage practically corresponding to the foliage of the partial shade form of *Deschampsia flexuosa*. Very few flower stems were produced from this particular mass of plants, those which were produced being of the typical kind. When fully ripened these plantlet-bearing stems would break at their nodes, and alighting at some suitable habitat would thus be able to establish a new grass colony. I have a similar example of this vegetative mode of reproduction in *Festuca ovina*, collected on Great Orme's Head, Llandudno; also a similar phase in an example of *Agrostis vulgaris* collected at Farnley Tyas, but in this case it is upon the flowering culms that buds arise at the nodes and give rise to groups of young plantlets.—W. E. L. WATTAM, Newsome.

CORRESPONDENCE.

CUCKOOS' EGGS AND FOSTER PARENTS.

Since my notes on this subject (*The Naturalist*, 1918, p. 174 and p. 236), I have found two other records, one recorded in *The Naturalist* for 1886, p. 17, in which F. B. Whitlock, writing under the heading 'Breeding of the Cuckoo,' says: 'My friend Mr. Wieldt, of Loughborough, however, found a Pied Wagtail's nest containing two eggs of the Cuckoo and four or five eggs of the Wagtail, and as the two Cuckoo eggs were similar in size and colour, he presumed they were placed there by the same bird.' The other instance is culled from *The Country Side*, July 11th, 1908, under the heading 'Young Cuckoos,' in a note by R. H. Dene Marlow. He writes: 'I once found two Cuckoo eggs in the nest of a Greenfinch (not a very usual foster-mother), and the eggs appeared to have been laid by the same Cuckoo.' I am quite aware from the necessities of the case that it is impossible for me to prove, or for that matter, any one else, to disprove, that the instances which have been given furnish evidence of such a nature as to preclude any doubt in the matter. Where such is the case, the question can best be approached by taking probability as our guide, and where probability is accumulative, it constitutes evidence of the highest value. In the case which came under my own observation, the eggs of the Cuckoo were so different from the usual type found in this district, and were so very similar in every respect as to preclude anyone from coming to any other conclusion than both eggs had been laid by the same Cuckoo.

Referring to *The Naturalist* for 1918, page 271, Mr. Massey writes: 'I take it that instinct tells her (the Cuckoo) there would be no room for two young in the same nest.' I should, however, like to ask Mr. Massey if Cuckoos are not at times prompted to do things where instinct is as much at fault, or more so, than laying twice in one nest. What about Cuckoos which deposit their egg in the nest of such birds as the Ring Ouzel, when to all appearance there are no lack of far more suitable fosterers—Skylarks, for instance, which are usually nesting in abundance in the neighbourhood where such eggs, as referred to, have been found? The Cuckoo's egg has also been recorded as having been found in such unlikely nests as the Dipper, Jackdaw, Little Grebe, Green Woodpecker, Stock Dove, Ring Dove, Turtle Dove, Jay and Magpie, and it will lay its egg and not unfrequently, in unfinished nests, even in such a nest as a Gold Crest, and it will deposit its egg sometimes in forsaken nests, and in nests from which its offspring, when full grown, could not escape, and it has been known to rob whole clutches of eggs after which it has deposited its own egg; indeed, there is no limit to the vagaries of individual Cuckoos, and I cannot conceive that there is any very great improbability in the belief that occasionally, at least, the Cuckoo does deposit two eggs in one nest. From the last paragraph of Mr. Massey's note, one would infer that I had been mistaken in my identification of the two Cuckoo eggs mentioned in my note (*The Naturalist*, July, 1908, pp. 236-7), but surely the evidence is of a similar nature in my case to that of Mr. Massey when he says, in the note referred to, that he has examined 772 sets of Cuckoos' eggs, and the statement of Mr. E. E. Pettitt (*The Naturalist*, June, 1918, p. 204), when he writes: 'I have seen hundreds of Cuckoo's eggs in situ.'

Referring to the note of Mr. Pettitt above mentioned, does not the laying of the Cuckoo commence before the end of May? To what part of Britain does his remarks apply, say, in average years?

E. P. BUTTERFIELD, Wilsden.

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FORMER STATUS OF THE STARLING.

Replying to my notes in *The Naturalist* for October, 1918, page 311, Mr. Massey, in *The Naturalist* for November, 1918, page 365, states: Fifty-eight years ago the Starling was a very rare bird indeed in this district, south and south-west of Manchester, adjoining the borders of North Cheshire. In this neighbourhood at this time, only one pair of birds was known to be breeding. About the year 1870, the Starling began

to increase rapidly, and for the last few years we have had an enormous roost in the rhododendrons.

Since I wrote the above article I have been looking over the old numbers of *The Naturalist* and *The Zoologist* to try to ascertain whether in any of the former references any indications are given, other than those given in any notes mentioned above, as to the Starling being a rare or unknown bird. From the years 1843 to 1857 many notes have reference to the Starling in a good number of counties, some do not, state whether it is common or abundant—a breeding species or chiefly an immigrant. Some, however, state that it breeds commonly; others that it breeds abundantly, but few, if any, state it to be a very rare and local species. Coming to the area nearest to that mentioned by Mr. Massey at the beginning of these notes,—that is, south and south-west of Manchester, adjoining the borders of North Cheshire—I find that Mr. T. W. Barlow, in *The Zoologist* for 1845, mentions the Starling (presumably nesting) in Cheshire, and Mr. Briggs refers to the Starling in *The Zoologist* for 1849, page 2,559. The latter says: 'On October 2nd, 1844, I noticed the most amazing flock of Starlings it was ever my lot to witness. At a distance it looked like a gigantic mass of cloud.'

Mr. E. G. Bayford of Barnsley, has written calling my attention to the fact that Neville Wood in his *British Song Birds*, states that the Starling is equally and plentifully distributed over the British Islands, and is well known to everyone, and the preface is dated from Sudbury Hall, Derbyshire, April, 1836.

Without questioning the statement of Mr. Massey in the least, it is strange if Mr. Wood's statement be true as to the status of the Starling in Derbyshire in 1836, that it should continue to be a rare bird on the borders of North Cheshire down to the years of 1870, but there must be some cause for I cannot but repeat that Mr. Massey cannot be mistaken.

As regards the statement by an old man who formerly resided here, it is quite possible he may have been mistaken, that he remembered the first pair of Starlings which bred in Wilsden, as my father and eldest brother never alluded to the scarcity of this species in this district, which they would have done if it had been a fact, and the statement that the Starling is but a recent addition to the avifauna of Ireland is undoubtedly in opposition to fact.

E. P. BUTTERFIELD.

LATE STAY OF SWIFTS.

Mr. Fortune in *The Naturalist* for November, page 361, and December, page 383, refers to having seen the Swift on October 6th, and as late as October 13th. These dates he mentions as exceptionally late ones, and he quotes from 'The Birds of Yorkshire,' an instance of a Swift having been seen in the neighbourhood of Harrogate on November 16th, 1901; and further states one is said to have been taken in a dormant state at Bolton Hall in mid-winter—which would be an interesting record if properly authenticated; but no authority is given for the record. It is a pity no details are given in such cases. At the time the record was published, I wondered whether there had not been some mistake. Is it possible that the Swift in this case might have been a species of bat? This, by the way, brings to my remembrance that the late Fred Smith of the British Museum has a record in *The Zoologist* for September, 1856, to the effect that he was informed on the 8th July, 1856, that bats were dropping down in the streets of Deal in huge numbers, and were being killed by boys, and the church was covered with them. He at once started off, and on arriving at the church in Lower Street he was astonished to see *Swifts* hanging in clusters from the eaves and cornices. Some clusters were at least two feet in length, and at intervals benumbed individuals dropped from the outside of clusters. Most of the Swifts have left this district, Wilsden, by the middle of August, but it is not all uncommon to see individuals, and sometimes even small flocks, much later. The date recorded in 'The Birds of Yorkshire' viz., November 16th, is certainly late, but one was seen at Greetland on 30th November, I believe, in 1913, but if my memory serves me rightly, instances have occurred in December.

E. P. BUTTERFIELD.

NEWS FROM THE MAGAZINES, etc.

Miss A. Lee writes on 'Old Botanising Haunts of Birkenhead,' in *The Lancashire and Cheshire Naturalist* for November.

The Geological Society of London has awarded the Murchison Fund to Mrs. Reid, widow of the late Clement Reid.

In *The Field* (November 16) Mr. A. Shaw reports that he shot a Red-legged partridge in county Durham on November 6th.

Mr. J. H. Gurney records a late Swift (September 27th) at Yarmouth (*British Birds*, February). In the same journal Mr. K. Fisher records the appearance of two Whooper Swans near Northwich.

As 'Miscellaneous Publications, No. 22,' the Board of Agriculture and Fisheries has reprinted from its *Journal*: 'Rats: How to Exterminate them,' and 'The Taking of Wild Rabbits,' by I. R. Sharpe (47 pp., 6d.).

Mr. G. Abbott describes some Sunderland specimens in a note on 'A Collection of Concretions at Tunbridge Wells,' in *Trans. and Journ. Eastbourne Nat. Hist., etc., Society*, Vol. VIII., No. 22.

Dr. E. O. Croft, of Leeds, well-known to our readers, has been appointed Professor of Obstetrics in the Leeds University, in place of Professor J. B. Hellier, who has retired.

In a report of a lecture on Coal-Dust Explosions, a contemporary informs us that 'there is a rush of gas laden with explosiou (sic) products, followed instantly by a volume of superheated stream.'

Mr. C. Davies Sherborn has a note on 'Pulcrus of Rome, the first to make a Restoration of an Extinct Mammal,' in *The Geological Magazine* for February.

Sir Arthur Evans has presented the fine collection of Ancient British Coins formed by his father, the late Sir John Evans, to the British Museum. This series is illustrated and described in Evans's 'Ancient British Coins.'

In *Man*, for January, Mr. Moir figures two Late Bronze-age urns from East Anglia, which, oddly enough, are much more primitive in type than a pre-historic vase, which we saw in the Ipswich Museum the other day, and which Mr. Moir had labelled as of Neolithic date.

There have been issued 'The Botanical Society and Exchange Club of the British Isles Report for 1917,' by G. Claridge Druce. Vol. V., part I., 204 pp., 7/6, and 'The Botanical Society and Exchange Club of the British Isles, Report for 1917, the Botanical Exchange Club,' by C. E. Britton, Vol. V., part II., pp. 205-262, 3/6.

Miss Annie Dixon reports to the Manchester Microscopical Society the occurrence of *Archerina boltoni*, a rhizopod, which she found plentifully in a pond at Didsbury. It was previously reported for Birmingham in 1885. To the same Society Mr. H. Britten makes a record of *Caraphractus cinctus*, one of the Fairy Flies. It was taken at Levenshulme and is said to be the first record for the north of England.

No. 13 of *The Journal of the East Africa and Uganda Natural History Society* (Longmans, Green and Co., pp. 279-357, 5s. 4d.), contains three papers on Caves, by C. W. Hobley, T. L. Deacon, and A. Knight-Bruce respectively; Note on the Former Level of the Victoria Nyanza, by Felix Oswald; Game and Disease, by A. B. Percival; On Snakes in East Africa, by A. Loveridge; A Volcanic Eruption in East Africa, by C. W. Hobley; and *Pitta angolensis longipennis*, by V. G. and L. van Someren.

Dr. R. C. L. Perkins gives 'Additions to E. Saunders's Catalogue of British Hymenoptera (Aculeata), 1902, and Changes in nomenclature' in *The Entomologist's Monthly Magazine* for January. The author quite truly says, 'in addition to these changes, which are sufficiently deplorable, others even more so will have to be made.' In the same journal is a record of *Elasmolesthus ferrugatus* taken by Mr. J. W. Carter, near Bradford, in 1889,—this is the third recorded British specimen of the species, and is really the earliest in point of time. Mr. D. Day records *Thalycra sericea*, *Delphax distincta* and *D. pullula* in Cumberland.

Naturalist,

11 MAR 1919



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A MONTHLY ILLUSTRATED JOURNAL OF
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EDITED BY

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THE MUSEUMS, HULL;

AND

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Contents :—

	PAGE
Notes and Comments (illus.):—The Natural History Museum; An Appointment; A Detriment to Science; The 'Creators'; Natural History Museum; An Appointment Made; Dr. Harmer's Qualifications; Church and Science; Ammonite or Mammoth; The 'All-Seeing Eye'; An Archaeologist's Eye; <i>Man Proud Man</i> ; The First Restoration of An Extinct Mammal; Underground Geology; A Yorkshire Analogy; A Side Issue; Summary of Arguments; A Handbook of British Birds; The Plan; Plovers and Their Eggs; A Pigeon's Crop	113-123
Nature and Man —Prof. W. Garstang, M.A., D.Sc.	123-134
Micro-Lepidoptera in Wharfedale —W. Mansbridge	135-136
The Spiders of Yorkshire —Wm. Falconer	137-140
Bibliography :—Papers and Records relating to the Geology and Palæontology of the North of England (Yorkshire excepted), published during 1918—T. Sheppard, M.Sc., F.G.S.	141-142
In Memoriam : William Denison Roebuck, M.Sc., F.L.S. (illustrated)—J.W.T.	142-149
Field Notes :— <i>Helix (Macularia) vermiculata</i> Müller in Northamptonshire; Denbighshire Hepatics; <i>Linum angustifolium</i> at Cloughton; Large Wharfe Trout; Derbyshire Butterflies; Lancashire and Cheshire Entomology; <i>Polynema natans</i>	122, 136, 150-151
Reviews and Book Notices	134
Northern News	140
News from the Magazines, etc.	152
Illustrations	116, 117, 122, 143
Plate I:	

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NOTES AND COMMENTS.

THE NATURAL HISTORY MUSEUM.

It seems hardly believable that after the awful lessons during the greatest war in History, when it has been demonstrated that the lack of the proper appreciation of science has almost been the country's ruin, there should be the necessity for the following letter which appeared in *The Times* of March 1st bearing the signatures of some of our greatest naturalists, viz. :—W. Boyd Dawkins, F.R.S., J. Cossar Ewart, F.R.S., F. W. Gamble, F.R.S., J. S. Gardiner, F.R.S., Walter Garstang, D.Sc., E. S. Goodrich, F.R.S., W. A. Herdman, F.R.S., S. J. Hickson, F.R.S., J. P. Hill, F.R.S., W. E. Hoyle, D.Sc., Arthur Keith, F.R.S., J. Graham Kerr, F.R.S., E. W. MacBride, F.R.S., W. C. McIntosh F.R.S., P. Chalmers Mitchell, C.B.E., F.R.S., E. B. Poulton, F.R.S., R. C. Punnett, F.R.S., A. E. Shipley, F.R.S., W. J. Sollas, F.R.S., Jethro J. H. Teall, F.R.S., and J. Arthur Thomson, LL.D.

AN APPOINTMENT.

The letter is as follows :—‘The Director of the British Museum (Natural History) is about to retire, and we learn with deep apprehension that the principal trustees, with whom the appointment rests, have received, or are about to receive from the general body of trustees a recommendation to pass over the claims of scientific men and to appoint a lay official, who is at present assistant secretary. The former directors, Sir Richard Owen, Sir William Flower, and Sir Ray Lankester, like the present director, Sir Lazarus Fletcher, were all distinguished scientific men. The Natural History Museum is a scientific institution. There is a large staff of scientific keepers and assistants. The director has to represent natural history to the public, to other scientific institutions at home, in the Dominions and colonies, and in foreign countries, and to the many Government Departments with which the Museum has relations. He must represent it with knowledge and authority. There are few posts with such possibilities of advancing the natural history sciences, of making them useful to the nation, and of interpreting them to the public. The existence of the post is a great stimulus to the zeal and ambition of zoologists and geologists.’

A DETRIMENT TO SCIENCE.

‘The arguments alleged in favour of the recommendation are trivial. It is stated that a former director was allowed by the trustees to leave the administrative details to the member of the clerical staff whom it is proposed to promote, that he performed these duties with ability, and during the tenure of the present director retained and extended his powers. It is urged that the tenure of the new director would be short as he would have to retire in two years under the age limit.

It is pleaded that promotion would entitle him to a larger pension and that he need not be called director, but only acting-director. Plainly, if the assistant secretary be the only man who knows the details of administration it is important that the permanent director should be appointed at once, in order to have the opportunity of learning them before taking them over. In actual fact there is nothing in the administrative work of the directorship that could not be learned in a few weeks or months by any person of ordinary intelligence. At least two of the present keepers are eligible for the vacancy, have attained the necessary scientific standing, and have ample experience of the Museum itself. To pass over these or several eminent and eligible men not on the staff in favour of one of the ordinary office staff would be an affront to scientific men and of grave detriment to science.'

THE 'CREATORS.'

It does seem strange after all the lessons we have had, that the appointment of the Director of our Natural History Museum—probably the most important post of its kind in the world—should, by a law old in date and mediæval in type, be in the hands of the Lord Chancellor, the Archbishop of Canterbury, and the Speaker of the House of Commons, whoever these very estimable gentlemen may be for the time being. It is very unlikely that, with their many duties, they can give much time to scientific matters. By a stroke or sheer luck one, at least, might possibly have some leanings towards science; the odds are however that the reverse will be the case. In the old days when all our National collections were housed at Bloomsbury, and books and mummies were the chief attraction, a Chancellor, an Archbishop and a Speaker may have been a *sui able* tribunal. But science has made leaps and has bounded away to South Kensington since then, and the present Government should see to it that the appointment of the Director of the Natural History Museum is in the hands of men capable of judging the requirements of the post, instead of, as in the present case, attempting to give the honour to the person who salaams to them on the few occasions upon which they meet, and who has the privilege of recording the Great Words which issue from their Great Mouths.

NATURAL HISTORY MUSEUM.

As a 'leader' in *The Times* points out:—'The present home of the Natural History Museum was completed in 1880. The logical sequence of this separation of the buildings and collections would have been to create a separate body of Trustees, with scientific knowledge and interests, for the governance of the new building; and this course was urged in a memorial signed by leading naturalists, including Darwin

and Huxley. But no action was taken on the memorial, and the general body of Trustees, although admirably adapted for the control of the Museum at Bloomsbury, still have very slight connexion with the natural history sciences. The Principal Trustees hold their position *ex officio*, and are not men of science. But in England anomalies of this kind have a way of producing their own corrective, and the appeal of our correspondents may well prove successful.'

AN APPOINTMENT MADE.

Since the agitation which appeared in the press, the matter has been settled, as will be seen from the following extract from a report in *The Times*:—At a meeting of the Electing Trustees of the British Museum the Prince of Wales was elected a Trustee in place of the late Duke of Northumberland. The following appointments have been made by the principal Trustees: Dr. Sidney Frederick Harmer, F.R.S., Keeper of Zoology, to be Director of the Natural History Departments, in the room of Sir Lazarus Fletcher, F.R.S., retired. Mr. Charles Tate Regan, F.R.S., to be Assistant Keeper of Zoology, in the room of Mr. W. R. Ogilvie Grant, retired. Dr. Harmer will retain the keepership of zoology until the end of the year 1920.

DR. HARMER'S QUALIFICATIONS.

Dr. Harmer, a distinguished Cambridge zoologist, was formerly a Fellow of King's College, Lecturer in Zoology, and Superintendent to the University Museum of Zoology. He is a leading authority on invertebrate zoology and has published many papers on polyzoa, and with Dr. Shipley, now Vice-Chancellor of the University of Cambridge, he edited the Cambridge Natural History. In 1907 he was appointed keeper of zoology at the Natural History Museum, and at once threw himself into his new duties with vigour. He has studied in particular the fauna of waterworks, and, following the example of his great predecessor, the late Sir William Flower, he has paid special attention to whales. He has taken a deep interest in the preservation of animals, and has advised the Colonial Office on the preservation of whales and seals. He is a vice-president of the Zoological Society. Mr. C. Tate Regan, F.R.S., who has been appointed Assistant Keeper of Zoology, is an authority on fishing, and has recently done important work on the Departmental Committee on fresh water fish.

CHURCH AND SCIENCE.

The protest to the newspapers against the filling up of the post of Director of the British Museum of Natural History by a clerk has been successful. But the three Principal Trustees

have followed the line of least resistance, and effected a compromise by selecting Dr. S. F. Harmer for the post and saving a salary, a part of which is no doubt to go as a sop to the clerk. The one person who by his position, his work and his general reputation the world over was marked out for the post, has been passed over. The anomaly and anachronism of the interference of the Church in scientific matters was never brought into a fiercer light than in this unseemly incident.

AMMONITE OR MAMMOTH.

Referring to our note (pp. 85-86) on the alleged carved statuette of a mammoth, four illustrations of which occupy a full page plate in *Man* for February, our suggestion (made merely from the illustration), that the 'model' was simply a



Portion of Chalk Ammonite—the alleged 'ventral surface of mammoth model.

natural 'piece of chalk,' receives unexpected confirmation from one of our leading palæontologists whose authority one cannot question. He points out that the so-called palæolithic carving is nothing more nor less than a fragment of the whorl of a chalk ammonite! A further examination of the four figures makes this so plain that we feel ashamed to say this was not noticed in writing our first note; the curve of the edge of the shell, the natural sculpturing on the keel, the divisions of the cell walls, and the siphuncle are all clearly shown in

this, with almost text-book clearness. For the loan of the blocks of two of these illustrations we are indebted to the publishers of *Man*.

THE 'ALL-SEEING EYE.'

Of one of these septa Mr. Moir writes :—' When we turn to the ventral surface of this carving we notice that the four legs, penis [the siphuncle !] and belly of the creature are depicted in a remarkable and realistic manner. An examination of this surface shows that in all probability the hind legs and penis (which was probably represented extended) have been broken off in ancient times, and this may also apply to the trunk, the lower end of which is visible in the photograph.' And so on. To make his discovery more



Side view of alleged Model of Mammoth.

plausible Mr. Moir gives one of his characteristic school-boy sketches, 'Outline drawing of woolly mammoth,' though this time it is not dated nor initialled.

AN ARCHAEOLOGIST'S EYE.

Mr. Moir concludes, 'This important discovery by Mr. Gathorne-Hardy, which it has been my privilege to describe, will no doubt open the eyes of archaeologists,' etc. Well, it *has*. But what we wonder at is that Mr. Moir should so readily be able to mislead many of our leading men, and get the results of his 'researches' published in otherwise reputable journals. Dr. Keith's excellent work on 'The Antiquity of Man' is scientifically damned by the inclusion of Mr. Moir's

account of his 'discovery' of the now notorious 'Ipswich Man,' originally said to have been one of the oldest skeletons in Britain, if not in the world, which Mr. Moir himself has since admitted to be a comparatively recent burial.

MAN PROUD MAN.

Mr. Moir, we know, is one of those enthusiasts who sees urns in trees, flints in running brooks, palæoliths in stones, and mammoths in everything. But that he should publish a portion of an ammonite in '*Man*, a Monthly Record of Anthropological Science, published under the direction of the Royal Anthropological Institute of Great Britain and Ireland,' passes our understanding. We certainly think that this Royal Institute, and its editor, are much to blame for allowing such stuff to be given to the world under the name of 'science.' It is evidently another proof of what our greatest poet has anticipated:—

'But *Man*, proud *Man*!
Drest in a little brief authority,—
Most ignorant of what he's most assured,
His glossy essence,—like any angry ape,
Plays such fantastic tricks before high heaven,
As make the angels weep.'

THE FIRST RESTORATION OF AN EXTINCT MAMMAL.

We take the following interesting note by Mr. C. Davies Sherborn from *The Geological Magazine*:—'The grammarian Appollonius relates that there was an earthquake during the reign of Tiberius Nero, through which many celebrated cities of Asia were entirely destroyed. . . . In those parts in which the earth was rent asunder very large dead bodies were found; the magnitude of which, indeed, so astonished the inhabitants, that they were unwilling to move them. That the affair, however, might be generally known, they sent to Rome one of the teeth of these bodies; and this was more than a foot long. The ambassadors, at the time they showed this to Tiberius asked him whether he wished that the hero to whom this tooth belonged should be brought to him. Upon this Tiberius very prudently thought of a means by which he might neither be deprived of knowing the dimensions of this body nor yet be guilty of the impiety of robbing the dead. He ordered a celebrated geometrician, whose name was Pulcrus, and whom he honoured for his art, to be called, and desired him to make a face in proportion to the size of that tooth. The geometrician, therefore, having calculated from the size of the tooth the dimensions of the face and of the whole body, accomplished the task imposed on him with great celerity, and brought the face to the Emperor, who, after he had satisfied himself with

beholding it, ordered the tooth to be restored to the place from whence it was taken.' Phlegon Trallianus, 'On Admirable Things,' ex notis Taylor, ed. Pausanias, i, 97, in iii. (1824), 240.

UNDERGROUND GEOLOGY.

At the recent Anniversary Meeting of the Geological Society of London, the President, Mr. G. W. Lamplugh, F.R.S., delivered an address on 'The Structure of the Weald and analogous tracts.' With respect to the Weald, he described how the numerous deep borings on its northern flank had proved that the Jurassic and Lower Cretaceous rocks as a whole formed a huge recumbent wedge, and how this wedge had its thickest part in the middle of the Weald. He showed that borings near Battle, along with other evidence, indicated that the central mass of sediments thinned southwards as well as northwards; that the anticlinal structure of the Weald was confined to the outcropping strata; and that it was superimposed upon a syncline of Jurassic formations. He mentioned that the superficial character of the anticline was recognized long ago by W. Topley, though the suggestion then made that the sediments were originally deposited as a dome had been disproved. The occurrence, at various horizons, of estuarine and other strata, which must have been deposited horizontally, but now diverged towards the Wealden axis like the ribs of an open fan, showed that the accumulation of almost all the Mesozoic sediments had taken place in a gradually deepening trough with relatively stable sides, and that the superficial anticline was due to a slight recovery or shallowing of the trough after it was filled.

A YORKSHIRE ANALOGY.

Following the comparisons instituted by Topley, he next dealt with a section through the Jurassic rocks of the South Midlands, from Gloucester to beyond Aylesbury, and showed that the original structure and conditions had been like that of the Weald, the present difference being due mainly to the tilting of the basin by the uplift of its western side, and the consequent removal of the strata on this side by erosion. This arrangement, resulting in a recumbent wedge, pointing eastward, prevails throughout the Midland counties up to the Humber. The discussion was then carried to the Jurassic rocks of Yorkshire, illustrated by a section drawn from Robin Hood's Bay to Pocklington, where again the recumbent wedge was shown to be in evidence, and to postulate a history similar to that of the Weald. Some reference was also made to the existence of an analogous structure in certain areas of Triassic and Carboniferous rocks, and to its possible occurrence in older formations.

A SIDE ISSUE.

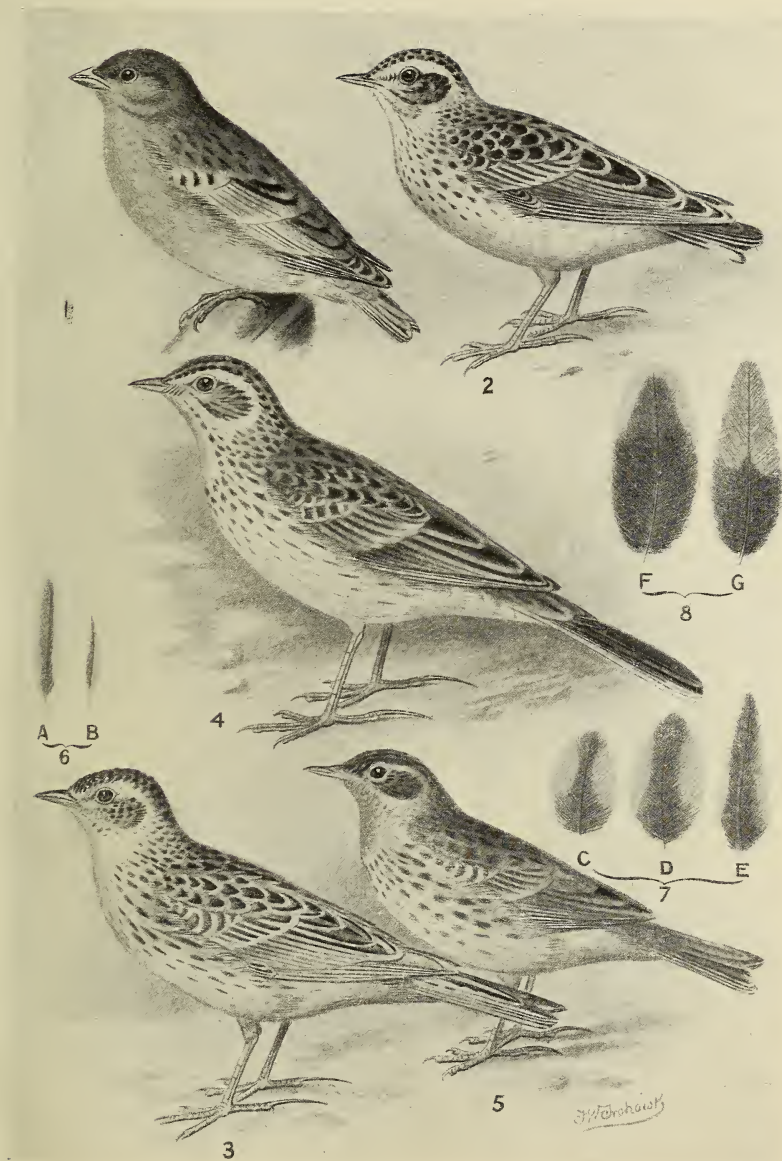
As a side issue arising from the study of the sections, it was pointed out that, in all cases where the formations were above sea-level, their outcrops coincided more or less closely with the tracts in which the formations severally attained their greatest original thickness; and the same relationship he'd good for nearly all other formations in England. It was suggested as an obvious explanation that, when denudation plays upon a mass of similar material of irregular thickness, the thickest parts of the mass will endure longest, so that lens-shaped deposits accumulated in a basin will lose area most quickly around any exposed margin, and will maintain it longest in the middle of the lens.

SUMMARY OF ARGUMENTS.

The president concluded his address with the following summary of his argument :—(1.) The Anticline of the Weald is a superficial structure dependent upon an underlying syncline. The lens of sediments thus bounded was deposited in a gradually deepening trough, which was afterwards shallowed by partial recovery. (2.) The Jurassic rocks of the rest of England have had a similar history, and show an analogous structure modified by unequal uplift. (3.) The Triassic and most of the Carboniferous rocks of England appear also to have been accumulated in deepening troughs or basins, which were afterwards shallowed by differential uplift where the deposits were thickest. (4.) Where the formations dealt with lie above sea-level, the present outcrops represent the areas of maximum development, and therefore coincide roughly with the position of the deepest parts of the old troughs. This factor may be of wide application, and has a practical bearing.

A HANDBOOK OF BRITISH BIRDS.

We have received from Messrs. Witherby and Co., Part 1 of 'A Practical Handbook of British Birds,' and if the remaining seventeen parts keep up to this standard, the book bids fair to be as useful and as valuable as was Barrett-Hamilton's 'British Mammals,' referred to in these pages at the time; and we don't think the editor, Mr. H. F. Witherby, could hope for greater praise. This section contains xvi. + 64 pp., two plates, one of which is excellently reproduced in colours, and over 60 illustrations in the text. In the preparation of the work the editor has had the assistance of E. Hartert, Annie C. Jackson, Rev. F. C. R. Jourdain, C. Oldham and N. F. Ticehurst. The first part contains an appropriate 'Introductory Note,' a 'Glossary of Terms,' a 'Key to the Orders,' and descriptions of various species beginning with (1) The Raven and ending with '*Carduelis hornemanni* 24. *Carduelis horne-*



1. Juvenile Snow Bunting.

2. Juvenile Wood-Lark.

3. Juvenile Sky-Lark.

4. First-winter Richard's Pipit.

5. Juvenile Rock-Pipit.

6. 1st primaries of Sky-Lark

(a) juvenile, (b) adult.

7. Crest feathers of (c) Sky-Lark, (d) Wood-Lark, (e) Crested Lark.

8. Feathers from rump of (f) Red-throated Pipit, (g) Meadow-Pipit.

Reproduced by permission from "A Practical Handbook of British Birds,"
edited by H. F. Witherby.



manni hornemanni (Holt)—Hornemann's Redpoll.' There is no disrespect to man Hornemann anyway!

THE PLAN.

Each species is referred to under the heads of Description, (nestling, Juvenile, first winter and summer; Measurements and structure); Characters and allied forms; Field-characters, Breeding habits, Food, Distribution (British Isles and abroad) and Migrations. The scientific names are of the recently invented *Pica pica pica* (L.) [!] type, whereas in these times we prefer seeing more *brevier*! We can only say that in the matter of paper, type, etc., the work is quite up to the Witherby standard. We are permitted to give a sample of the illustrations herewith, by the courtesy of the editor (see Plate I.).

PLOVERS AND THEIR EGGS.

Messrs. Johnson Wilkinson and F. H. Edmondson, the joint secretaries of the Yorkshire Naturalists' Union Wild Birds and Eggs Protection Committee write:—'Following up a complaint by the Ingleton Tenant Farmers' Association, the West Riding County Council have made inquiries from the Yorkshire Naturalists' Union and other associations concerning the lapwing, green plover, or peewit. On November 25th, 1918, at the meeting of the Bradford Naturalists a resolution was passed to the effect that the plover and eggs should be protected all the year round. On December 7th, 1918, at the meeting of the Y.N.U., held in Leeds, Mr. H. B. Booth moved the following resolution, which was seconded by Mr. L. Gaunt, and passed unanimously:—"In view of the extreme usefulness of the lapwing to agriculturalists, it being a bird without a single fault, we consider that both the birds and eggs should receive complete protection in the West Riding. We would also recommend that it should be made an unlawful offence to offer for sale either the lapwing or its eggs in the Riding." It is gratifying to the members of the Y.N.U. to learn that the County Council at Wakefield have approved of the resolution, and that henceforth both plovers and eggs are to be protected all the year round. It is now up to the farmers themselves to do their best to prevent persons wandering on their lands and taking and destroying at their pleasure both birds and eggs.'

A PIGEON'S CROP.

We take the following from *The Journal of the Board of Agriculture*, Vol. XXV., No. 5:—"The Board have received the following communication from Dr. Thos. Milburn, the Secretary of Agriculture to the Lancashire County Council:—"Many examples of the damage done to newly sown corn

crops and to young clover plants have, from time to time, appeared in the Press. The following will serve as a useful record of the voracious feeding of the wood pigeon, and will also show its preference for a vegetable diet, particularly grain and cultivated plants. The pigeon was shot by Windham E. Hale, Esq. The corn and other seeds were counted and have been preserved as a permanent record at the Agricultural Department, County Offices, Preston. The following is a list of the contents of the crop (see Fig.) :—

Barley grains	...	...	...	...	...	...	...	561
Clover leaves	...	...	...	...	...	...	...	113
Rye Grass seeds	...	...	...	...	...	...	...	986
Clover seeds	...	...	...	...	...	...	...	108
Weed flowers	...	...	...	...	...	...	...	—



It was difficult to give a correct record of the weed flowers, as they were in various stages of development. There would, however, probably be about 60 to 80." The accompanying illustration appeared with the above note and by the permission of the Board we are able to give it to our readers.

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***Helix (Macularia) vermiculata* Müller in Northamptonshire.**—An undoubted specimen of this South European species was found in August of last year by Mr. C. E. Wright, of Kettering, during the process of cutting out a new heading in the Ironstone mine situate on the site of the old Roman encampment called Citteringham. The shell was found amongst a number of particles of *Helix hortensis*, at about two feet down in one of the old Roman Kitchen-middens, and has lost its epidermis, and in great part the dark pigmentation it may have had, but is in fair condition, considering its age. Specimens of *Helix hortensis*, Oyster shells, broken Romano-British pottery, coins, brooches, parts of sandals, etc., have been unearthed during the excavations of these Kitchen-middens.—JNO. W. TAYLOR, March 25th, 1919.

Naturalist,

NATURE AND MAN.

 PROF. W. GARSTANG, M.A. D.Sc.

(Continued from page 96).

With regard to the supposed cruelty of the carnivorous habit, the special case of the hunter and the hunted, it is even more necessary to lay stress on the possibility of great exaggeration, owing to the common failure to recognise the greater play of memory and anticipation in human than in animal consciousness. There is good reason to think that a race for life among animals is most probably devoid of all the more painful elements of fear that goad human beings under similar circumstances, while the excitement of the race, in animals adapted to it, is more likely to be accompanied by a sense of pleasure than of pain. Finally, when the prey is seized or struck, we have direct evidence that the sensory mechanism is so profoundly stunned by the shock that actual pain must be both rare and insignificant. Livingstone's sensations when he was seized by a lion, and shaken as a rat by a terrier, have been fully described by himself, the description being quoted by Wallace. The effect of this shake, he says, was to cause 'a sort of drowsiness, in which there was no sense of pain or feeling of terror, though I was conscious of all that was happening.' Whymper's statement of his experience of a fall of several hundred feet on the Matterhorn is equally emphatic. 'He declares that while falling and feeling blow after blow, he neither lost consciousness nor suffered pain, merely thinking, calmly, that a few more blows would finish him.' We have probably all of us, unfortunately, heard only too many of the experiences of friends and relatives variously wounded in the course of the present war, and their testimony amply corroborates these and other records. Thus I fully endorse Wallace's remark, 'We have therefore a right to conclude that, when death follows any great shock, it is as easy and painless a death as possible; and this is certainly what happens when an animal is seized by a beast of prey.' To which quotation I will add a portion of Wallace's general summary: 'On the whole, then, we conclude that the popular idea of the struggle for existence entailing misery and pain on the animal world is the very reverse of the truth. What it really brings about is the maximum of life and the enjoyment of life with the minimum of suffering and pain.'

I have ventured to emphasise this aspect of the question not merely because I am interested in the spread of truth, but because every convinced naturalist has opportunities of correcting popular errors on these and similar questions; and it is not until public opinion has been rendered more healthy

and pruned of much false sentiment that many of the commonest ills of mankind can be eradicated. In my opinion the future welfare of humanity depends more upon a training of the sentiments and emotions in the light of a knowledge of Nature than upon anything else.

III.*—THE INTERPRETATION OF NATURE.

To a child Nature is a picture drawn around the stage of his activities. His little mind, vivid with an unceasing stream of growing instincts, fresh sensations, new ideas, is the only reality. You might roll up the background and substitute another—it is no more essential than the scenery to an acrobat. The idea that he is part of this same Nature, which is so obviously outside him, would be unintelligible to him. That she has been in any way concerned in building him up, in moulding the very activities which mark him off from her, would seem nonsense. His lively consciousness is the measure of what is; the past and the future have no existence.

In a little while he begins to make discoveries. Parts of the scenery move without him. The sun crosses the sky; leaves fall and scatter; daisies close their eyes; a butterfly flits past; a blackbird darts cackling into the bushes. The background begins to puzzle, then excites him. The very ground is full of moving things; a centipede darts away from his spade; helpless caterpillars curl up, uncoil, and hide again. Thus gradually becomes unveiled the world of life outside our own, with its identical problems of being and becoming,—the thrush's nest, the pupa in its earthen cradle; and I know one small boy who found to his delight a baby earthworm emerging from its cocoon.

He begins to use his hands; watches the carpenter, sweep, blacksmith; plays with tools; tries to make things, unmakes them; but soon is drawn into the circle of school, games, playmates. Comradeship becomes a passion; the instincts of the pack take hold of him; he loses his freedom; their law becomes his law. While he is learning the rules of corps life, of leadership, and 'give and take,' Nature is eclipsed. Gradually, however, the pack changes, and, being now strong of limb, he can drop out from time to time with a chum, if he is lucky, and spend long summer days exploring the haunts of the wheatear, snipe and kingfisher. Too often the guide, or the stimulus, or the opportunity is lacking; other claims or interests attract him; the call of the moors and woodlands

* Sections III. and IV., though contemplated as part of this address, were not actually read.—W. G.

finds no response ; Nature as an influence and a revelation retires from his consciousness.

Duties now press more and more ; he looks into the future, forms hopes and plans and fears ; becomes a man. Time passes ; the years race where formerly they crept. Sometimes he is oppressed and weary, and re-visits the country scene. It is quiet and soothing, but seems empty where once it was so full. Nature alone has ceased to be a companion, though now and again she breaks upon him with faint echoes and memories of the old glory. But these occasions end in sadness ; he and Nature have drifted apart ; her lessons have ceased ; he has lost touch.

Is not this a fair picture of the relations to external Nature of many an ordinary man ?

And what a loss it is ! You and I, who, through all the ups and downs of life, have kept on visiting terms with the 'old Nurse,' would be twenty years older but for her. The patch of her wild garden which we have cultivated has been sadly small, but it has been enough to keep us under the old benign influence. And what one has garnered he has shared with others, so that we have gained far more than our own experience, and have had access to the stores of our predecessors as well. Nature has long ceased to be the indifferent background of our lives. Each rock and stone, each brook and pond carries legends of former times ; mosses and liver-worts, ferns and flowers daily build up for us the story of the past ; worms and insects, newts and lizards, birds and beasts carry on the tale of life to the threshold of to-day. So far from age drifting us apart from Nature, every year has brought us closer. The sense of unity increases with our knowledge, in spite of the mysteries which defy examination.

Now to see the unity and simplicity amid the infinite variety of nature has always been claimed to be the privilege of the poet, who alone is said to 'see Nature whole.' Science is supposed, on the other hand, to take partial views, and to be content with analysis and dissection. If this contrast were really tenable, we should have to claim for Natural History a place outside and above the spheres both of poetry and science, for the field naturalist is able, above all men, to appreciate both the poetic and the scientific aspects of Nature. Yet, in truth, no such contrast is permissible. Open the literature of the poets and you will find no 'unity' of Nature, but almost as many 'Natures' as poets ; to many poets Nature seems to be little more than a reflection of their moods. Open the literature of science and, if you can read it, you find the discoveries in every section blending into a harmonious whole, a progressive revelation of the continuity of Nature from nebula to man. The poet makes an artificial

unity of Nature by animating it with a projection of his own soul ; science unveils the real unity of Nature by stripping off its many-coloured cloak of time and circumstance.

Thus the mantle of the prophet is passing—indeed, has already passed—from the poet to the man of science. Why then do we still hear of the inspiration of poetry and the materialism of science ? There are at least three reasons, each one of which, it must be admitted, is bound to affect the unscientific world with prejudices not unnatural. Firstly, the continuity which science has been engaged in revealing at the outset connects man downwards with the dust instead of upwards with the angels ; and Disraeli spoke for more than himself when he asserted that he, for his part, was ‘on the side of the angels.’ Secondly, science may not appeal to the emotions which every man carries about with him, but depends in the last resort on minute details, the verification of which by the man in the street is rarely possible. And thirdly, instead of the ‘magical felicity of expression’ with which the poet clothes his ideas, science confronts its votaries with a harsh jargon of such extreme technicality that it demands months, if not years, to master the vocabulary and axioms of even a single branch of science.

The prejudices due to these causes certainly tend to disappear as knowledge of the larger achievements of science become diffused ; but the industrial bye-products of science multiply so rapidly that we shall probably have to lie under the charge of materialism until matter itself has been consigned by the physicist to the limbo of popular illusions. In the meantime we may sum up the situation as regards the interpretation of Nature to mankind by the statement that poetry appeals to the heart without convincing the head, while science appeals to the head and leaves the heart cold.

Will the situation end there ? Assuredly not ; for science is no longer a curious collection of drawing-room experiments and quaint specimens, but a spirit permeating life with a new outlook and a new idéal, the lode-star of which is truth—‘truth, though the heavens fall’—and influencing every form of human activity. A force which penetrates society in all directions, and like a ferment, stimulates change and achievement in man’s material, intellectual and spiritual spheres alike, is not going to leave the poetry of the future unaffected. No literature in the world can rival our own in its exquisite descriptions of the phases of external Nature ; but, as in the past, so in the present the ‘stir and growth’ of the times cannot fail to call forth its own poet, who in this case must be the herald and interpreter of the coming kingdom of science. The spirit bloweth where it listeth ; but the poet-seer, who first attains the full spiritual freedom of science, will want to pursue

at least two themes 'unattempted yet in prose or rhyme:' Man conscious of his powers as the Interpreter of Nature, and Nature revealed as the parent and surest Guide of Man.

Thus, although we began by denying that the poets of the past had ever really 'seen Nature whole,' we end by admitting that poetry, after all, must be the great interpreter of Nature for the mass of mankind. What poetry unified of old was not Nature but the subjective dreams and myths of men. Substitute for these the objective revelations of science, and poetry may still fulfil its ancient role; for the essence of poetry lies not in its materials but in their adaptation to the spiritual needs of man. The men of science may expound their technical details to one another, and with more or less success point out the consequences of these to narrow sections of mankind around them; but most men are to be moved through the heart rather than the head, and require the winged words from a poet's quiver to produce the full effect which the clumsy circumlocutions of science are unable to achieve. As one of my literary colleagues, a lover of Nature, too, has expressed it: 'Surely from out of the brazen world of the scientist the poet will one day deliver a golden' (Moorman, *The Poetic Interpretation of Nature*, 1905).

Similarly we began by denying that science is limited to partial views and is content with analysis and dissection, but we must end by admitting that, so far as mankind at large is concerned, the specialisation of science and the slow process of synthesis naturally produce the impression which we seek to dispel. For the task of science, being no less than the understanding of the whole of Nature, is undertaken not by one man, or even by the co-operation of a group of men, but by the co-operation of generations of men, who carry forward the double work of analysis and synthesis from the stage at which it was left by their predecessors. The vast panoply of Nature, in its whole extent and depth, is analysed piecemeal by astromomers, geologists, chemists, biologists, who work independently, without organisation, guided simply by their opportunities and special interests. Overlapping and repetition—those bugbears of political organisers—occur everywhere and are indispensable; but elastic communications are maintained between the various groups, and discoveries in one section, which bear upon the work of another, are soon picked up, circulated, criticised and applied. Inevitably analysis—the first step—occupies much of the time of the individual worker; but the actual analyses which he undertakes are almost always determined with the object of completing the data for a particular synthesis. These partial syntheses are the temporary goals of every worker; their accomplishment stimulates and encourages the analytic labours which often

tax severely his resources of skill and patience ; and it depends on the accord or conflict of related syntheses whether progress in a particular field can be definitely reported, or the energies of all be turned back once more to discover the sources of discrepancy and to devise technique of still greater precision.

It is only, therefore, with radical qualifications that the man of science can be characterised by partial views and devotion to analysis. These, with him, are only means to an ideal end which is ever before him. They are, moreover, the only means by which that ideal can be realised upon unshakeable foundations : 'The stone which the builders rejected is become the head of the corner.'

In this way, then, the army of science moves towards its objective ; a far-flung battle-line of irregular front, parts moving rapidly over ground well-cleared by successful advance guards, other parts held up by obstacles which require new methods to tackle, but all the units in touch and pursuing the same aims in different sectors ; the individuals gratified by every partial success, hardened by each failure, striving for objects which they know will but mark stepping stones of further progress ; ever straining towards a goal which others will reach, if not themselves.

With regard to the interpretation of Nature then, the revelation of science, like life itself, is 'a progress, not a station.' It may be that the reconstructions of science will always fall short of the ideally full and final truth. Does it follow from this admission that in the meantime the syntheses of science are false, uncertain, unreliable ? You will find many quibblers eager to pursue that line of argument, and to support it by pointing to the rapidity with which scientific views on various matters have 'changed' (as they call it) in our own times. Mendelism, they will tell you, has knocked the bottom out of Darwinism ; radio-activity has upset the atomic theory ! How do we know that to-morrow some new discovery will not consign the whole of present-day science to the dust-heap of preposterous delusions ? The answer which would satisfy anyone familiar with the methods of science is that the foundations, as distinct from the fringes, of science are too securely laid to admit of any 'change' other than one of extensions and consequently of the proportion of parts to one another. But if 'signs and wonders' are needed as evidence of the truth, surely the material achievements of science are sufficiently demonstrative of a real knowledge of Nature's secrets ? As a matter of fact, each of the newer discoveries cited has conflicted with nothing but the most insignificant of details in the old ones. One (to resume our analogy of the battle-front) has filled up an admitted gap, the other has created a salient from which

visions of the next great advance are already taking form. A big discovery in science marks not an oscillation of the line, but an advance; the bases are already impregnable; oscillations are possible only in the outpost line or in regions where the line is 'fluid' and making its first tentative advances into territory yet unexplored.

At any given time, then, science is truth. It is not the 'whole truth,' but every advance brings it nearer to that position. It is not 'nothing but the truth,' for it is preceded by a screen of mobile scouts who are prepared to entertain every imaginable theory, until they find one which fits their observations so completely that they can pass it back as at least a sound working hypothesis. The main body acts on the new theory; if it is found to work, it is adopted and incorporated; if not, a new hypothesis is invented which does work. In any case the fact that science provisionally adopts many hypotheses which may be replaced at a later date by others, and these possibly by others again, is merely a statement of the conditions under which science advances from the known to the unknown. 'Science moves, but slowly, slowly, creeping on from point to point.' The amount of conquered territory steadily enlarges, and that, so far as it extends, is truth—truth ample enough to live by, and absolute enough to die for. It is only along the receding boundaries of the unknown that oscillations of theory are frequent, as they are inevitable. Against the barriers of the unknowable science does not batter itself, but none the less it is ever on the look-out for gaps in the fence, and a flank attack has turned many an impregnable position.

IV.—THE CONTINUITY OF NATURE.

The first chapter in the scientific synthesis of Nature may fairly be said to be drawing to a conclusion with the virtual demonstration of the material unity of all things. The matter of which the immense variety of observable things is made—suns, moons and stars, earth, air and sea, plants, beasts and men—is found to be the same everywhere, so far as its essential characters are concerned; *i.e.*, there is not a special material for the suns and stars, another for the land and water, and another for the living things of earth. All are built up of varying combinations of the same elemental materials—the 80 odd 'elements' of the chemist. The combination of any two elements does not yield a mere blend of the properties of the two constituents, but yields a third kind of matter with properties quite distinct from either; and the combinations which make up the living matter of a plant or animal are not identical with any to be found elsewhere. But this difference is one of the degree of complexity, rather than the kind, of

material, and it appears to be certain that there is nothing in the body of a plant or animal which cannot be resolved into the same ultimate elements as many of the commonest mineral constituents of the earth and its atmosphere. Now these ultimate elements have perfectly fixed properties, and combine with one another in perfectly fixed ways ; and the wonder of life is increased enormously by realisation of the fact that the bodies which exhibit life show no trace of any material elements peculiar to themselves. Dust they are, and to dust they return.

But since we have admitted that the matter of living bodies is readily distinguishable by its complexity from that of every kind of inorganic matter, and since no plant or animal is known to have arisen by any other method than that of ordinary reproduction, it may well be urged that these facts are sufficient to distinguish the living world sharply and absolutely from inorganic Nature. The gap is, indeed, a real one, but its significance is only to be properly appreciated if we compare this gap with other gaps that are recognisable in the continuity of Nature.

At the present time, for example, there are gaps between all the great classes and orders of animals and plants ; indeed, it is the existence and width of gaps which is the basis of the customary schemes of classification, both of plants and animals. The one-toed horses, asses and zebras of to-day, with deep-crowned grinding teeth, form a family of animals which is sharply and absolutely distinguishable from their next-of-kin, the 3- or 4-toed tapirs, with low-crowned molars ; but the evidence of fossils shows that in Miocene times the gap was distinctly less, for all the horses or asses then living were imperfectly 3-toed, and many had teeth with lower crowns ; while in Eocene times the ancestors of horses and tapirs were barely distinguishable from one another, since all were perfectly 3- or 4-toed and had low-crowned molars. Thus the gap of to-day between horses and tapirs did not exist in early Tertiary times. There are so many similar cases, indeed, and there is so much corroborative evidence of other kinds, that practically all gaps between the types of animals and plants living to-day are regarded as due to unequal rates of progress, or divergent modification, from originally continuous groups of ancestors, the connecting links having been improved, or at least, modified out of existence. Thus, life, at any rate, provides no evidence of the discontinuity, and much evidence of the continuity of Nature.

But what of the fundamental differences between the chemical elements of matter ? Surely in them we have clear evidence of discontinuity in Nature ? The answer again is ' Yes, certainly, under the conditions which now prevail on

the earth's surface ; but not necessarily under the conditions which prevailed when

‘The solid earth whereon we tread
In tracts of fluent heat began.’

Water is a compound of Hydrogen and Oxygen ; but it retains its physical form only within a narrow range of temperature, below which it turns to ice, and above which it turns to vapour. Within a very wide range of temperature its chemical constitution still remains unchanged ; but heat its vapour to about $1,000^{\circ}$ C. and its constituent particles fly asunder as free Hydrogen and free Oxygen. In the flame of the electric arc, which yields the highest temperature at present available on the earth—about $3,500^{\circ}$ C.—practically all the compound forms of matter break up into the elementary atoms of which they are composed. At this temperature coal does not burn, but glows, splits up into its elementary atoms of Carbon, Oxygen, Hydrogen and Nitrogen, and disappears in invisible vapours of these four substances.

Now, from our present point of view, what does all this mean ? Two things at least ; firstly, that not merely types of life, but also inorganic bodies have their own conditions of existence—in this case, conditions of temperature ; and secondly, that, under the conditions of temperature which are now available on the earth, the chemical elements with few exceptions are ultimate forms of matter, and therefore discontinuous.

But as some substances are more refractory to heat than others, and as the number of substances which resist decomposition is successively reduced by increase of the temperature applied, what would happen if we could subject these earthly elements to the still greater heat of the glowing sun ? The answer to this question has been provided by the spectroscope. Some elements, like sodium, will glow sufficiently over a gas-jet to show their characteristic lines ; others, like iron, do not show them below the heat of the electric arc in air, when a many-lined spectrum becomes visible. But when the electric pressure is increased to its maximum by forcing the current through a vacuum, the spectrum changes, most of the lines disappearing, and a few of them becoming more intense. This change is understood to imply a temporary break-down of the complex iron-atom into simpler atoms of what may be called iron-predecessors.

When the spectroscope is turned to the sun and stars, the spectra obtained are found to vary with the heat of the stars examined. In the hottest stars there is no trace even of the vacuum-arc predecessors of such metals as iron and copper, still less of carbon. Except helium in small quantities, almost

all the lines indicate 'predecessors' of our earthly elements, and only a few of these, of which hydrogen is one. In stars of the next grade, such as Algol, typical hydrogen appears and helium is prominent, while oxygen, nitrogen, and carbon 'predecessors' also appear. In the next group, which includes Sirius, predecessors of many metals become prominent, and in still cooler stars, including Arcturus, Capella and our own Sun (if we can speak of coolness when the temperature is estimated to be at least twice that of the Voltaic arc), typical earthly metals appear, such as iron and calcium, whilst the spectra of many of the 'predecessors' become obscure or disappear. In still other and cooler stars evidences of carbon make their appearance and the metallic lines become faint.

Similar observations have been made on the spectra of nebulae, comets and meteorites. Ordinary nebulae show only the lines of helium, hydrogen, and of another rarefied gas, which is as yet unknown in the earth's atmosphere, nebulium. (It will be remembered that Lockyer recognised helium by its spectrum in the sun before Ramsay extracted it from earthly sources), and it is commonly believed that such nebulae consist only of these rarefied gases. Whether that be so, or nebulae are merely the incandescent atmospheres surrounding shoals of meteorites, the fact remains that at least the atmospheres, if not the interiors, of these primary sources of worlds consist of nothing but the most rarefied of gases, one—and probably two—of which are so inert that their atoms do not even combine with one another into molecules; while comets on the other hand display the spectra even of compounds which on the earth at present are invariably found to be the products of organic activity, viz., hydrocarbons; and carbon compounds, as well as familiar metals, are common constituents of meteorites which have fallen upon the earth from the unknown depths of space.

Does it not follow from all this that the material basis of things everywhere within 'the flaming bounds of time and place' is the same, but that it changes in complexity in accordance with changes in the conditions? The many divergent forms of matter on the surface of our cold earth become reduced in number, in complexity, and in internal energy as we turn the spectroscope to scenes in space of greater heat and electrical excitement. Compounds break down into elements; the heavier and more active elements become replaced by simpler 'predecessors,' until finally nothing is left but the lightest and most inert of gases, under conditions of intense electrical excitement.

Reverse the statement and we get a picture of the evolution of the material elements themselves; the hottest stars with few very simple inert elements represent a stage in the devel-

opment of the cooler stars in which the elements are more numerous, more varied and more energetic in themselves; and, as they cool, the complexity of the forms of matter and their variety goes on increasing, while the light active gases, such as hydrogen, and the inert gases, such a helium, become scarcer and scarcer, the former, on cool worlds like the earth, becoming locked up in compound forms of matter (*e.g.*, water), the latter becoming locked up with additional quantities of electrons to make new elements of greater weight, such as radium. How else are we to account for the facts shown by a comparative study of the light of the suns and stars, and for the fact that the undoubted element radium is now busily engaged in decomposing into the scintillating particles above mentioned? Indeed, physicists are now debating whether these same electrons, the minutest particles ever measured, and everywhere alike, whatever their origin, are not the ultimate, uniform and universal particles out of which the atoms of the various elements have arisen by condensation into systems of varying number and relative motion.

In any case it is clear that the chemical elements of the earth at the present time are not the beginnings of matter; they are the stable or persistent forms which matter has assumed at successive stages of its long history; and the differences between them afford no more evidence of an essential discontinuity of Nature than do the existing differences between one kind of plant or animal and another.

Thus we have seen that in two cases capable of investigation, the gaps that now exist between one chemical element and another and between one type of animal and another are not fundamental, but depend on the disappearance of the conditions under which alone the original connecting links are capable of existence. Midway between these two gaps lies the interval between the complex carbon compounds of the living body and the few simple inorganic carbon compounds. Probability is plainly on the side of the view which regards this interval in the same way as due to the unsuitability of the conditions now prevalent on the earth, either for the formation or for the persistence of the connecting links. Unfortunately the biologist cannot apply his microscope, as the chemist can his spectroscope, so as to get other worlds in an earlier phase of evolution to supply the missing chapter; nor can the geological record help us with regard to the origin of the simplest forms of life. There is no means of tackling this problem except the patient methods of the physiologist and biochemist, who will some day give us a mental synthesis of the nature of life even if they do not succeed in artificially creating it. And there I must leave it.

What is clear is that living matter is distinguishable from

inorganic matter not in its elements—for these are identical—but in the greater complexity of the compounds into which these are built up, in the constant interaction of the parts within the whole, and in the ceaseless interplay between the whole and the materials around it. The beginnings of a world are marked by extraordinary inertness and simplicity in the first forms of matter (helium, etc.) and tremendous play of energy outside them. Evolution consists in the gradual enclosure, as it were, of fractions of this energy within new forms of matter, different kinds of matter locking up different amounts of energy; until finally life presents us with a reversal of the picture—matter inconceivably, and almost immeasurably complex, discharging energy from within itself in a hundred novel ways, and absorbing the declining energies around it as fuel to its own fires. Thus the evolution of matter runs parallel with the involution of energy. Vital energy is the latest term in the series, and is fitly conditioned by a material basis in which the complex balance of atoms, molecules and multi-molecules is so delicate and unstable as to defy direct investigation, and the organisation of parts is so elaborate that it can take account of the past, make provision for the future, adapt itself to a thousand variations in the external conditions, and gain an increasing control over the forces of Nature which produced it.

(To be continued.)

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Fresh-water Biology, by H. C. Ward and G. C. Whipple. New York: J. Wiley and Sons; London: Chapman and Hall, 1,111 pp., 28s. net. This is one of the most comprehensive and scientifically complete volumes that we have seen for some time. Besides the two principal authors, there is a whole army of 'collaborators,' each a specialist in his particular department. There are thirty-one chapters, the type and paper are well chosen, and there are over 1,500 illustrations, mostly small, but all excellently drawn and clearly indicate the characteristics described in the text. 'Fresh-water Biology' covers much, and while the book is by Americans and is illustrated by American species, it will be of great service to English students as we know of no single publication in this country which so well embraces the various aspects of biological science. After an excellent Introduction by H. B. Ward, there are chapters on Conditions of Existence, and Methods of Collecting and Photography. Then follows an enormous series of monographs on Bacteria, Algæ, Protozoa, Sponges, Worms, Animalcules, Shrimps, Water Fleas, Copepoda, Ostracoda, higher Crustaceans, Mites, Insects, Molluscs, and Aquatic Vertebrates; the final chapter being on Technical and Sanitary Problems, by G. C. Whipple. As a fair sample of the thoroughness of the work reference may be made to Chapter IX. dealing with Flagellate and Ciliate Protozoa, by H. W. Conn and C. H. Edmondson. This occupies over 60 pages, is illustrated by 200 sketches, and there is a good list of 'Important References' to works on this particular subject. The other chapters are similarly thorough and complete.

MICRO-LEPIDOPTERA IN WHARFEDALE:

W. MANSBRIDGE.

HAVING made a number of visits to different places in Wharfedale in recent years, a note of my captures, especially as regards the less known 'micro' section, may be useful to lepidopterists. Most of my collecting has been within easy reach of Menston, but anyone living near enough to visit Grassington frequently would no doubt find that district best repay working. Unfortunately nearly all my notes relating to Grass Wood have been lost, otherwise the list for that locality would have been longer. As it is one species new to Porritt's list is included, viz., *Sciaphila penziana*, which should be looked for on the rocks and scars on the more open ground near the wood.

The part of Otley Chevin referred to is the wooded slope, facing north, just round the corner from the Bradford road. Heber's Ghyll Wood and the moorland slope above it are doubtless well-known, at any rate they can be found quite easily by the visitor to Ilkley. The other part of Rombald's Moor most frequently visited by me borders the road, on the right, just past the 'Gaping Goose,' and yet another good place, perhaps the best before the heather was burnt off in 1917, is up the clough nearly at the top of the road from Burley station. This, in time, will recover, hence I mention it here; it is marked Coldstones Beck on the one-inch ordnance map.

In regard to the macro-lepidoptera I have not met with any tendency to melanism in the above localities except in the case of *Polia chi*. Of this moth the var. *olivacea* and the dark slaty variation are frequent on the wall at the top of Heber's Ghyll Wood; last year I took a number of *Phigalia pedaria* in the wood but all were of the light typical form. I was disappointed in this as in 1891 I took one of the earliest examples of the melanic ab. *monacharia* on record, this was in Danefield Wood on Otley Chevin. The usual moorland species of macros are of course common on suitable ground on Rombald's Moor, and a specimen of *Emmelesia taeniata* taken in 1892 was captured there; at the time I regarded it as a variety of the abundant *Larentia didymata*. I do not put this forward as a record, because it still requires confirmation, but the species should be sought on the mossy parts of the Moor in July.

Otley Chevin.—*Peronea variegana*, vars. *cirrana* and *borana*; *P. comparana*; *Teras contaminana*; *Grapholitha nisella* var. *decorana*; *G. penkleriana*; *Harpipteryx xylostella*; *H. nemorella*; *Æcophora fulvigutella*; *Argyresthia spiniella*; *A. nitidella*.

Rombald's Moor.—*Tortrix viburnana*, *Amphisa gerningana*, *Peronea caledoniana*, *Penthina sauciana*, *Bactra lanceolana*, *Grapholitha geminana*, *Pamplusia mercuriana*, *Eupæcilia angustana*, *Aphelia osseana*, *Exapate congelatella*, *Phycis fusca* (*carbonariella*), *Incurvaria masculine*, *Coleophora cæspititiella*, *Elachista rhyncosporella*.

Menston.—*Dictyopteryx forskaleana*, *Peronea sponsana*, *Sciaphila virgaureana* and black variation, *S. hybridana*, *S. conspersana*, *Scoparia murana*, *S. truncicolella*, *S. angustea*, *Ornix avellanella*, *O. guttea*, *Coleophora paripennella*, *Lithocolletis alnifoliella*.

Ilkley, Heber's Ghyll Wood.—*Scoparia ambigualis*, *S. murana*, *S. truncicolella*, *Penthina betulæana*, *Pædisca occultana*, *Solenobia inconspicua* (larval case), *Scardia cloacella*, *Argyresthia spiniella*, *A. andereggiiella*, *Ornix torquilella*, *Elachista obscurella*, *Lithocolletis oxyacanthæ*,* Frey., (*pomifoliella*, partim), *L. alnifoliella*, *L. quercifoliella*, *Cemistoma laburnella*.

Grass Wood.—*Scoparia ambigualis*, *S. truncicolella*, *Pyrausta aurata*, *Ennychia octomaculata*, *Mimæseoptilus bipunctidactylus*, *Leioptilus osteodactylus*, *Argyrotoza conwayana*, *Penthina dimidiata*, *Sciaphila penziana*, *S. chrysanthæana*, *Grapholitha penkleriana*, *Ornix torquilella*.

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BOTANY.

Denbighshire Hepatics.—For some time I have been trying to induce some of the younger members of the Manchester Microscopical Society to take an interest in the Hepaticæ, and I have found in one a promising student, Mr. Harry Bendorf, who has been spending a few days lately at Colwyn, Denbighshire, and has sent me a small collection in which are two species new to Denbighshire, at least they are not recorded in the 'Census Catalogue' nor in the paper contributed to *The Naturalist* last year by Mr. D. A. Jones, on the 'Mosses and Hepatics of Denbighshire'; they are *Metzgeria conjugata* Lindb. and *Bazzania trilobata* L. The list of species is interesting from a beginner's point of view—*Aneura multifida* L., *Metzgeria conjugata* Lindb., *Alicularia scalaris* Schrad., *Eucalyx obovatus* Nees., *Lophocolea cuspidata* Limpr. in fruit, *Lophocolea heterophylla* Schrad., *Chiloscyphus pallescens* Ehrh., *Cephalozia bicuspidata* L., *Calypogeia fissata* L., *Diplophyllum albicans* L., *Lejeunea cavifolia* Ehrh.—WM. HY. PEARSON.

***Linum angustifolium* at Cloughton.**—On Sept. 12th, 1918, I gathered *Linum angustifolium* Huds. in bloom in Goosedale, Cloughton, near Scarborough, where it seemed fairly plentiful. I see that Baker in his *North Yorkshire*, p. 273 (Yorkshire Naturalists' Union edition), gives only two records of the finding of the plant, so that it may be worth while to mention this occurrence. My identification has been confirmed by Mr. J. Beanland and Mr. J. W. Carter.—HERBERT E. WROOT. Bradford.

* Bankes has shewn (*E.M.M.*, 1889, p. 250) that *pomifoliella* is a composite species it will therefore be necessary in future, when naming any of this group of the *Lithocolletidæ*, to refer to his descriptions.

THE SPIDERS OF YORKSHIRE.

WM. FALCONER,
Slaithwaite, Huddersfield.

(Continued from page 25).

Gen. *Baryphyma* Sim., 1-1.

B. pratensis Bl.

Uncommon, on record for two southern, three eastern, six midland and two northern English counties, and N. Wales; abroad, France and Denmark. *Adult* April and May; ♀s later also. First occurrence—E. A. Parsons, May, 1909.

V.C. 61.—Sutton Drain bank near the bridge between Sutton and Wawne, one ♂, and Pulfin Bog, both sexes, E. A. P.

V.C. 64.—Bishop Wood, one ♀, T. S.; Woodhall, one ♂, from river drift, on left bank of Wharfe.

Gen. *Peponocranium* Sim., 1-1.

P. ludicrum Camb.

Widely distributed in Great Britain as far north as Culbin Sands, Moray and in the Isle of Man; very rare in Ireland, Hill of Howth; abroad, west and north of France; at roots of grass, furze and heather. *Adult*—♂ May to July, ♀s till autumn. First occurrence—the author, near Pole Moor, June, 1899.

V.C. 61.—Spurn, one ♂, Bielsbeck, ♀s, Houghton Woods (Market Weighton), few both sexes, Snake Hall, ♂, T. S.; Riccall and Skipwith Commons, W. P. W., W. F.

V.C. 62.—Lonsdale, Ayton and Eston, not uncommon, J. W. H.; Raincliff Woods; Ravenscar; Goathland; Boosbeck and Lazenby.

V.C. 63.—Naylor Rough and Hurst Wood, Shipley, W. P. W.; Pole Moor; Drop Clough; Wessenden Valley; Marsden Clough (Holmfirth); Meltham; Crosland Moor and Butternab Wood; Dunford Bridge.

V.C. 64.—Howden Ghyll, Shipley Glen, Newby Moss, W. P. W.; Sawley district, S.M., W.F.; Trow Gill (Ingleborough); Kingsdale Beck; Malham; Burnsall; Arncliffe; Burley-in-Wharfedale; Ilkley; Plumpton Rocks; Moor Allerton; Adel Moor; E. Keswick and Linton Common.

V.C. 65.—White Force, Upper Teesdale, W. P. W.

Gen. *Minyriolus* Sim., 1-1.

M. pusillus Wid.

With a wide range in Gt. Britain and on the Continent; only recently found and very rare in Ireland; minute and not everywhere common. *Adult* throughout the year. First occurrence—the author, Drop Clough, October, 1898.

V.C. 62.—Wilton Wood, Normanby Intake, Farndale, Westerdale, Turkey Nab, Bilsdale Head and Gt. Ayton Moor (common) J.W. H.; Ringingkeld Bog, both sexes, R. A. T.

V.C. 63.—Drop Clough, six ♂s, many ♀s.

V.C. 64.—Malham Cove, one ♀, W. P. W.; Sawley High Moor, both sexes, S. M., W. F.; Bolton Woods, both sexes; Grass Woods, one ♀.

Gen. *Panamomops* Sim., 1-2.

P. bicuspis Camb.

Very rare, recorded for Dorset, Somerset, Sussex, Surrey, Cambs., Staffs., Cheshire, Cumberland and Northumberland, but not yet for either Scotland or Ireland; abroad, France, Germany and Switzerland. *Adult* throughout the year. First occurrence—H. C. Drake, Humber Bank, 1908.

- V.C. 61.—Humber Bank east of Hull H.C.D. (*Trans. Hull Club* 1908); Wilberforce House, Hull, one ♀, T. S.
 V.C. 62.—Scarborough, H. C. D., *Naturalist*, August, 1908; Langdale End, one ♀, R. A. T.
 V.C. 64.—Linton Common, one ♀.

Gen. *Savignia* Bl., 1-1.

S. frontata Bl.

- In all parts of the British Isles, usually common, but abroad noted only for Scandinavia and Central Europe, where it is scarce; at the roots of grass, heather and furze, amongst fallen leaves, moss, etc., or beneath stones. *Adults* throughout the year. First record—Yorkshire, S. G. B. I., p. 317.
 V.C. 61.—Very extensively diffused, occurring in all parts except the dune areas.
 V.C. 62.—Marton, G. B. W.; Gt. Ayton Moor, Eston, Lonsdale, (common), J. W. H.; Scarborough, H. C. D.; Raincliff Woods, Oliver's Mount, and Seamer Road (Scarborough), R.A.T.; Marske; Coatham Marshes; Lazenby.
 V.C. 63.—Woods about Shipley, Saltaire, Cottingley and Harden, W. P. W.; Cusworth, T.S.; Calverley, S. M.; Askern; many localities about Slaithwaite, Marsden, Meltham and Huddersfield; Heath, Wakefield; Deffer Wood (Cawthorn).
 V.C. 64.—Bishop Wood, T. S.; Roundhay Park, Leeds; about Adel and Alwoodley; Scarcroft Hill, Thorner; Compton Bank Top.
 V.C. 65.—Upper Teesdale, Mickleton, W. P. W.

Gen. *Diplocephalus* Berth., 8-10.

D. cristatus Bl.*

Widely distributed and often abundant in Gt. Britain and on the Continent; occurs also in the U.S.A.; only recently found in Ireland, where it is rare; one ♂, Isle of Man, 1908; at the roots of herbage, among dead leaves or beneath bark of trees, occasionally in houses. *Adult* throughout the year.
 First record—R. H. Meade, Bradford, S.G.B.I.

- V.C. 61, 62, 63, 64, taken in most localities, where any investigation has been made, and commonly, the fewest stations being in 61, and the most in 63 and 64.
 V.C. 65.—Upper Teesdale, Y. N. U.
D. permixtus Camb. (*D. spinosus* Hull, *The Naturalist*, Dec. 1901, p. 365).
 Widely distributed in the British Isles and in many places common in damp ground; abroad, Northern France and Bavaria. *Adult*—autumn to spring. First occurrence—the author, Slaithwaite, April, 1898.
 V.C. 61.—Barmby-on-the-Marsh, Sandholme, Weedley Springs, Sutton, Market Weighton and King's Mill Marsh, Pulfin Bog (Beverley), Kelleythorpe, Hornsea Mere, T. S. Riccall and Skipwith Common, numerous.
 V.C. 62.—Lonsdale, fairly common, Farndale, not common, J.W.H.; Eston Moor.
 V.C. 63.—Hurst Wood (Shipley) and Stony Ridge, W. P. W.; on the moors and in the cloughs about Slaithwaite, Marsden, Meltham and Holmfirth; Dean Head; Chew Valley, Greenfield; Mollicar Woods, Huddersfield; Dunford Bridge.
 V.C. 64.—Brim Bray and Eavestone, S.M., W.F.; Ingleborough; Malham Tarn; Harewood Park; Ilkley; Adel Bog; Askham Bog.
 V.C. 65.—Cronkley, Upper Teesdale.

* In New Zealand introduced by means of egg sacs among imported European hay-seeds.—*Ann. Soc. Ent. de France* Vol. LXXXVI., année 1917.

D. latifrons Camb.

On record for several counties in Gt. Britain and three of the Irish provinces, but more plentiful in the north than the south ; abroad, Central and Western Europe ; amongst fallen leaves and at the roots of grass and other herbage, chiefly in woods. *Adult* autumn to spring. First occurrence—the author, Slaithwaite, March, 1898.

V.C. 61.—S. Cave, Brough, Haltemprice Lane, Cottingham, Hull Bank Hall, Beverley Road (Hull), Birkhill Wood (Cottingham), Brantingham Dale, Boynton Woods, Bielsbeck, Hornsea, Welwick, T. S. ; Haworth Hall, Sutton Drain and Bentley Woods, E. A. P. ; Kelsey Hill, E. B.

V.C. 62.—Wilton Wood, among pine needles, J. W. H. ; Cayton Lane, R. A. T.

V.C. 63.—Woods about Shipley, and Seven Arches (Saltaire) W.P.W. ; Crimsworth Dene, W. P. W., W. F. ; thinly in the open, commonly in woods about Slaithwaite, Marsden, Saddleworth, Holmfirth, Greenfield, Honley, Meltham, Armitage Bridge, Lepton and Huddersfield ; Hebden Bridge.

V.C. 64.—Shipley Glen and Cottingley, W. P. W. ; Ilkley, W. R. B. ; Rivock and Howden Ghyll, R. B. ; woods about Knaresborough, W. P. W., W. F. ; Sawley district, S. M., W. F. ; Bolton Woods ; Ingleton ; Leeds ; Adel ; Meanwood ; Harewood ; Ripton ; Stubbing Moor ; Malham ; Hackfall.

V.C. 65.—Y.N.U. Upper Teesdale, Mickleton.

D. picinus Bl.

Recorded from Dorset, Essex, Staffs., Norfolk, Northumberland, Glamorgan, N. Wales, Lancashire and the S. of Scotland ; very rare in Ireland ; abroad, Sweden, West and Central Europe ; in dry woods in similar situations to the last and on bushes. *Adult*—autumn to spring. First occurrence—the author, Drop Clough, June, 1899.

V.C. 61.—Bentley Woods, both sexes, E. A. P. ; Scampston, ♀s.

V.C. 62.—Kildale Woods, fairly plentiful, J. W. H. ; Oliver's Mount, R. A. T. ; Raincliff Woods ; Riftwood (Saltburn).

V.C. 63.—Bradford, G. H. O. (V.C.H.) ; woods at Shipley and Cottingley, W. P. W. ; Bottoms Wood and Scout Wood (Slaithwaite) ; Drop Clough ; woods about Huddersfield and Honley, but not at all common in these localities ; Askern ; Deffer Wood (Cawthorn).

V.C. 64.—Shipley Glen and Trench Wood (Saltaire) ; Burley-in-Wharfedale, Knaresborough, W. P. W. ; Howden Ghyll, R. B., W. P. W. ; Sawley district, S. M., W. F. ; Roundhay Park (Leeds), plentiful ; Meanwood ; Wharfedale, Harewood to Boston Spa ; Dalton Lane ; Stubbing Moor ; Chandler's Whin (York) ; Washburn Valley ; Bolton Woods ; Mickley and Hackfall.

D. beckii Camb.

Noted for eight English, three Scottish and two Irish counties, but not common anywhere ; abroad, France and Germany, but apparently rare in both ; partial to obscure and neglected places, cellars, etc., under stones and beneath bark of trees. First occurrence—the author, Slaithwaite, November, 1899.

V.C. 61.—Garden, Ryde Street (Hull), Weedley Springs, Snake Hall, Wilberforce House (Hull), a ♀ at each place, T. S.

V.C. 62.—Kildale, one ♀, G. B. W. ; Farndale, Eston and Gt. Ayton moor, 'not uncommon amongst moss,' J. W. H. ; Raincliff Wood, one ♀, R. A. T.

V.C. 63.—Garden, Hope View, Moorhead, W. P. W. ; Slaithwaite, cellar, on wall in summer house, greenhouse, manure heap and under thick ivy ; Bottoms Wood (Slaithwaite) ; Wilberlee, barn and under stones on a wall ; Clough House Wood and Ainley Place

Wood; Almondbury, cellars and stable; Storthes Hall Wood from tree stump; sewage works, Berry Brow.

D. fuscipes Bl. (*Imeticus neglectus* Camb. ♀).

Widespread in the British Isles, but commoner in the north than in the south; abroad, France and Switzerland, usually abundant amongst fallen leaves and at the roots of herbage and under stones. *Adult* throughout the year. First occurrence—the author, Slaithwaite, November, 1899.

V.C. 61, 62, 63, 64.—widely distributed and in many places plentiful, the recorded stations being numerous.

V.C. 65.—Y. N. U., Upper Teesdale, Mickleton.

D. castaneipes Sim.

A rare British spider, Snowdon and Moel Siabod; Helvellyn; Ben Nevis (♂) and Forres (♀) in Scotland; Clare Island and Co. Donegal, Ireland; abroad, Southern France, two localities; a mountain species.

V.C. 64.—Between Middle House and Malham Tarn, but nearer the latter, June 9th, 1911, three adult females from roots of grass; summit of Ingleborough, one ♂, one ♀, 1916.

D. protuberans Camb.

Only one example, an adult male, previously found in Britain, amongst moss, Gibside, Durham; abroad, France (Simon, *Arachnides de France*, Tome V., partie 3.).

V.C. 63.—Clough House Wood, Slaithwaite, on left bank of Ainley Place beck, from grass roots, May, 1911, one ♂, three ♀s, the latter the first occurrence of the sex in Britain; Drop Clough (Marsden), one ♂; Simon's figure (*loc. cit.*) is not a good one, and a drawing of the epigyne was made from one of these examples, vide *The Naturalist*, Aug., 1911, p. 285. Higher up the same stream three ♂s were taken, September, 1911, and three ♀s, October, 1913. During Y. N. U. Meltham, September, 1911, Mr. Winter obtained a ♂ in Honley Old Wood.

Gen. *Tapinocyba* Sim., 4-5.

T. praecox Camb.

Not common, on record for Dorset, Staffs., Cheshire, Lancashire and Northumberland; recently found in Leinster; abroad, France and Germany; at roots of grass, furze and heather, among moss or beneath stones. *Adult* autumn to spring. First occurrence—the author, Crosland Moor, April, 1902.

V.C. 61.—Cliffs, N. of Bridlington and outer court, Hull Museum, one of each sex, Houghton Woods (Market Weighton), both sexes, Weedley, one ♂, one ♀, Holme-on-Spalding Moor, one ♀, T. S.; Spurn, one ♀.

V.C. 62.—Lonsdale, from moss, rare, J. W. H.

V.C. 63.—Bottoms Wood, Slaithwaite, one ♂, one ♀, and Blackmoor-foot, two ♀s; quarries above Linthwaite Church, two ♀s; Helme, one ♀; Crosland Moor, four ♂s, 14 ♀s; Wholstone Moor, one ♀, and near Pole Moor, two ♂s, three ♀s; Standedge, one ♂.

(To be continued.)

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The following note, taken from a Hull evening newspaper, may be of interest to our medical readers, as it is possibly the result of an overdose of a certain mixture which a section of the medical men has recently recommended for the 'flu:—'To counteract the 'flu, a medical writer advises people to sterilise all nose and mouth night and morning. Men with full sets of whiskers or cream separators, side wings, face mittens, or chest warmers with No. 5 ear flaps, are advised to boil them for twenty minutes.'

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ADDENDUM.

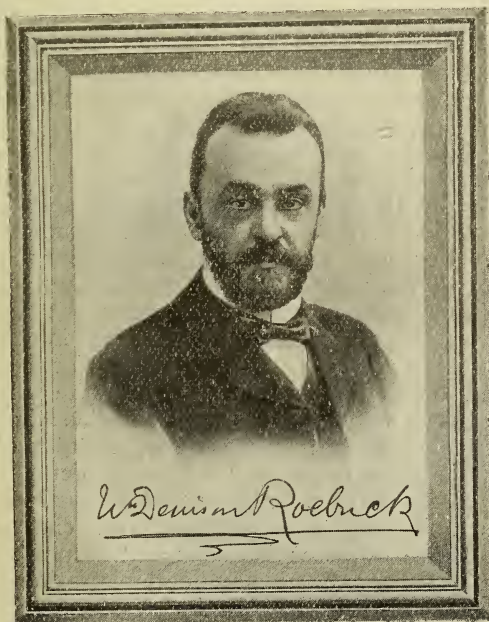
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In Memoriam.

WILLIAM DENISON ROEBUCK, M.Sc., F.L.S.

By the lamented death of William Denison Roebuck on February 15th last, in the 69th year of his age, the study of Natural History, and especially of Yorkshire Natural History, has sustained an irreparable loss which will long be felt, as his influence extended to wherever Natural Science is cultivated.



His death was the result of a sudden paralytic seizure on the evening of January 19th, when apparently in the full enjoyment of health and strength; he was gradually recovering from this attack when he had a second seizure from the effects of which he gradually succumbed.

Mr. Roebuck was born in Leeds on January 5th, 1851, and resided there until 17 years of age, when his parents removed their summer residence to Pannal, a pleasant village near Harrogate, and during his summer residences there in 1868 and succeeding years, he commenced the active collection, study and registry of the Butterflies and other insects met with, incited thereto by the possession and perusal of Coleman's 'British Butterflies,' a book responsible for making

many converts to Natural History pursuits. His observations upon the Bees and allied groups made at this period are interesting and valuable, and have been placed on record in the Victoria County Histories.

Although not professing to be an Entomologist, Mr. Roebuck was always intensely interested in that science, and was rarely absent from a meeting of the Entomological Section of the Yorkshire Naturalists' Union. In his earlier days he had done excellent work in the science, as those who remember his splendid paper entitled 'Locusts in Yorkshire,' which appeared in *The Naturalist* in 1877 will know. But the title does not indicate the scope of that paper, which was in reality a history of all the known locust flights throughout Britain from the years 1842 to 1876, and is even yet by far the most comprehensive and exhaustive account of the subject we possess. Then at one time he was greatly interested in Hymenoptera, and was largely responsible for the list of that group of insects in the 'Victoria History of Yorkshire,' as he was also for the entire Entomological chapters in the Victoria Histories of some of the other Northern Counties of England. For very many years he had kept records, with references, of all the papers and notes referring to all orders of insects (when he could do so, cutting out and keeping the papers or notes themselves) published in the various journals, referring to Yorkshire and other North of England Counties, and so was in possession of a vast store of information which was always available to any responsible author writing on any particular subject connected with Entomology. His help to the science in this way has been incalculable.

He was possessed of a brilliant and unusual combination of synthetic and analytical faculties and characterised in an eminent degree by great foresight and accurate judgment, while his genius for organization and administration was greatly developed, the constitutions of the Yorkshire Naturalists' Union, The Conchological Society, the Leeds Naturalists' Field Club, the Leeds Conchological Club, the Leeds Philatelic Society, etc., being all standing testimonies to his abilities and foresight in these directions, as the constitutions of these bodies were all drafted by him and have successfully withstood the tests of time.

The Yorkshire Naturalists' Union, of which he was the inspirer and organizer, had ever a chief place in his affections and interest, for he it was who conceived the idea of its formation by the enlargement of the sphere of activity and usefulness of the West Riding Consolidated Naturalists' Society, an Association of the Natural History Societies of South-west Yorkshire, of which Mr. Roebuck was appointed joint secretary with Mr. J. M. Barber, of Heckmondwike, in 1876.

In the following year with the enthusiastic co-operation of Mr. G. T. Porritt, the late C. P. Hobkirk and other leading Yorkshire Scientists, the Yorkshire Naturalists' Union was established as a means of a more efficient unification of Yorkshire scientific effort, while the subsequent adoption of Mr. Roebuck's suggestion to institute working sections for each branch of Natural History has been remarkably successful and tended more fully to ensure a closer fellowship and a more general spirit of co-operation among our numerous Yorkshire Societies.

This powerful Union, constituted by the federation of upwards of 40 local Natural History Societies, comprising some thousands of members, is an organisation second only in influence and membership to the British Association, and a long list of distinguished scientists have held the post of President, among them being Mr. Roebuck, who by the unanimous wish of the Union held that honourable position in 1903, and as the topic for his Valedictory Address, placed on record a full and authoritative history of the Union and *The Naturalist* from their inception.

He it was who conceived and constituted the 'Fungus Forays' which were such a great success, as to eventually become one of the leading features of the Union's work. The first foray was held in 1881 at Studley and Harrogate, and followed by the second in 1888, and were so thoroughly appreciated by those concerned, that the meetings were arranged as Annual events, and the results obtained culminated by the publication, in the Transactions of the Union, of 'The Fungus Flora of Yorkshire,' by the joint labours of George Massee and Charles Crossland.

Mr. Roebuck was the Honorary Secretary and one of the impelling spirits of the activities of the Union for nearly 30 years, and in addition to this onerous post was Editor of the 'Scientific Transactions' an important series of publications which include many works of high scientific merit. From 1884 to 1902 he was sole Editor of *The Naturalist* with the exception of comparatively short periods in which he had the collaboration of W. Eagle Clarke and Mr. E. R. Waite. In addition to all these duties he personally made all the arrangements for the numerous excursions and meetings held during each year for business purposes or for the investigation of the fauna and flora of the county.

Besides these great calls upon his time and energy he in 1881, in association with Dr. Clarke, prepared and published the important and standard work 'The Vertebrate Fauna of Yorkshire' which the bibliographic and scientific knowledge they possessed, enabled them to issue with remarkable completeness. In addition he gave priceless and unstinted help

to friends and correspondents upon very diverse subjects, either the results of his own personal experience or culled from the enormous mass of classified records which he had accumulated by years of unwearied industry and research.

This valuable assistance has been gratefully acknowledged by Mr. G. T. Porritt in his excellent Manual 'A list of Yorkshire Lepidoptera'; by Mr. T. H. Nelson in his 'Birds of Yorkshire,' by Mr. J. W. Taylor in his Monograph of British Land and Fresh-water Mollusca, and others, so that it is safe to say that without his great help and willing co-operation many valuable works would never have been undertaken.

The formation of the Lincolnshire Naturalists' Union was entirely due to the suggestion of Mr. Roebuck, who always maintained a lively interest in its welfare and progress and frequently attended its meetings. With the co-operation of Rev. E. A. Woodruffe-Peacock, Mr. J. F. Musham, Mr. H. Wallis Kew and other Lincolnshire Naturalists he thoroughly and systematically investigated its Molluscan fauna, of which he has already published a preliminary list and accumulated the material for a more complete account.

With Mr. Musham, he was alternately President and Secretary of the Conchological Section and has always kept the Conchological records of the Society.

The Union fittingly signalized their appreciation of the value of his services by selecting him as the President for 1909-10, and an account of his life and work by Rev. E. A. Woodruffe-Peacock, with portrait, was published in the Transactions of the Union for the year 1915.

Mr. Roebuck was also one of the founders of the Leeds Field Naturalists' Club, in 1870, and was, to the last, one of the most valued and influential of its members, while the numerous quarto volumes of written and classified records of all forms of life, by his hands, now in possession of the Society, are a monument of his zeal and enlightened industry in the cause of the Society and the progress of science, and have proved of immense utility to various authors who have availed themselves of the stores of knowledge they contain.

He several times filled the office of President, his enthusiasm and personal magnetism attracting good assemblages of members to the meetings, and his terms of office were always periods of prosperity and progress.

As Secretary in 1871 and for many years afterwards he worked untiringly in the interests of the Society, perfecting its organization and increasing its usefulness, so that from the training and experience there acquired, it is not surprising that it was one of the most successful provincial Societies and has turned out an unusually large proportion of skilled zoological investigators, who have been or are now acting as

Museum Directors or Curators not only in Leeds but in Dublin, Edinburgh, Calcutta, Sydney, Adelaide, Christchurch, Wellington and elsewhere, the present Chief Inspector of Canadian Fisheries also received his early training here, as did the Professor of Zoology of Sheffield University, and others.

As a Malacologist, Mr. Roebuck was one of the four original founders of The Conchological Society of Great Britain and Ireland, an organization which has now a numerous and influential membership not merely in this country, but in all parts of the civilized world.

He acted for many years as Honorary Secretary, and much of the Society's success may be traced to the foresight and genius he displayed in the preparation of the rules governing its activities.

As President he was a very popular officer, and an unusually large influx of new members took place during his period of office, a striking testimony to his reputation and influence in the scientific world, which was further emphasized by his unanimous selection as one of the ten Honorary Members of the Society.

Mr. Roebuck's inclinations were always to help forward neglected subjects to a due measure of appreciation, and it was chiefly this feeling which led him to become the pioneer and populariser of the modern study of the terrestrial slugs, a group which prior to his adoption of them as a field of study, was a neglected and despised set of animals. As a result of his energy and personal influence such interest and enthusiasm was infused into the investigations that in the course of a few years, six new species of slugs were discovered or satisfactorily differentiated from previously known species with which they had hitherto been confused, and thus raised the number of British species from twelve to eighteen. By the force of his diligence and ability he became pre-eminent amongst British Limacologists and the universally acknowledged authority on the morphology of the British species of *Limacidæ* and *Arionidæ*, with whose remarkably varied aspect he was most profoundly conversant.

This distinguished and honourable position was recognised by the late Prof. Simroth, of Leipzig, the equally brilliant exponent of the internal structure of the Slugs generally, who in his honour applied the name *roebucki* to the large, conspicuous and peculiar *Urocyclus* discovered in Zanzibar.

The Leeds Conchological Club, a very active and successful organization, of which he was also a founder, so highly esteemed his services to science and to the Club, that the members some little time ago showed their deep appreciation of his great services, by electing him as their Honorary Life-President.

As a further representative example of his interest and activity in the cause of science, during his long and useful life, may be reckoned the great and valued help and guidance he rendered in the formation of The Craven Naturalists' and Scientific Association thirty-two years ago, contributing afterwards in many ways to its welfare and progress. The Association gratefully remembers and appreciates his many and willing services in its cause.

One of the chief interests of his later years was Philately, for the promotion of the study of which subject he in 1890, in conjunction with his friend, Mr. T. K. Skipwith, founded the Leeds Philatelic Society, which with the exception of the Royal Philatelic Society of London is the oldest in the kingdom. Of this organization he was the Secretary and had filled the office of President.

His energies in this study, were for many years past, especially devoted to the collection of British issues, and in this branch his collection is so large and valuable, that on the visit of His Majesty King George to Leeds in September 1915, a special audience was arranged to enable him to show to His Majesty the issues of especial interest or rarity contained in the collection.

This rich and valuable collection, which illustrates the history and uses of stamps generally, was presented by Mr. Roebuck in 1913 to the University of Leeds, where it now forms one of their choice treasures.

Mr. Roebuck's great attainments and the important influence he exercised in the promotion of science and scientific methods were gracefully and fittingly acknowledged in July 1915, when the University of Leeds publicly conferred upon him the honorary degree of Master of Science. On that occasion Professor Garstang, in citing the grounds for the distinction bestowed, acclaimed him as 'the pioneer and organizer of the systematic survey of the natural history of the county, the man of method, insisting upon the guarantees of accuracy and completeness, the keeper of our records, a student of many sided interests, and of indefatigable perseverance.'

He was indeed not only the inspirer of energy and persistence, his was also the guiding hand which led the real workers into habits of systematic investigation and publication; he inculcated the combination of broad views in general, with rigid and detailed registration of the material results. The importance of accurate and full data, the study of variation and the proportionately greater value of the common or dominant species in studying Geographical Distribution was consistently urged upon every suitable occasion.

For a great number of years he diligently examined many

parts of the British Isles, but he was especially attached to the investigation of the fauna of Yorkshire and Lincolnshire, with which counties from years of travel he was thoroughly familiar.

During 1904-1906 he travelled extensively abroad visiting Australia, New Zealand, India, South Africa and Egypt, and made many interesting additions to our knowledge of the diffusion and dominance of the European species of mollusks and other organisms which had been designedly or unwittingly introduced by man to these primitive countries.

His zealous and whole-hearted pursuit of Natural History was stimulating and infectious, and gathered around him sympathetic supporters and coadjutors in the good work he was engaged upon, and gave a decided impetus to scientific pursuits in Yorkshire and beyond, but the immensity and variety of his services to science, are as yet only inadequately understood or utilised, even by his most intimate and appreciative friends who knew and valued his untiring zeal and devotion to the advancement of knowledge and his many personal sacrifices in its cause. Space will not allow for a full recital of his manifold activities and interests and of the many tributes of appreciation he has received, but many friends and none more than the present writer will sadly miss his ever present help and comradeship and mourn the great loss sustained by his lamented death.

The remains were cremated on February 17th at Lawnswood Cemetery, Leeds, the impressive service being attended by a representative assembly of Scientists; the University of Leeds being represented by Professor E. O. Croft, M.D.; the Linnean Society of London by Mr. G. T. Porritt, F.L.S., and Mr. W. H. Burrell, F.L.S.; the Yorkshire Naturalists' Union by Professor Garstang, D.Sc., Mr. Fowler Jones, Mr. Godfrey Bingley and others; the Leeds Corporation (Education Department) by Alderman W. H. Clarke; the Leeds Philosophical and Literary Society by Mr. H. Crowther, F.R.M.S.; the Leeds Naturalists' Field Club by Mr. J. A. Hargreaves, Mr. E. J. T. Ingle, Mr. C. A. Cheetham, Mr. J. Fry Pickard, Mr. C. Turner, Mr. B. Beevers and others; the Conchological Society of Great Britain and Ireland by J. Wilfrid Jackson, F.G.S., and J. W. Taylor, M.Sc.; the Leeds Conchological Club by Mr. F. Booth and Mr. Harrison Hutton; the Leeds Co-operative Field Club by Mr. S. Matthewman, and the Doncaster Scientific Society by Dr. H. H. Corbett.

The Royal Philatelic Society of London was represented by Mr. Abraham Oxley; the Leeds Philatelic Society by Mr. T. K. Skipwith, Mr. W. K. Skipwith, Mr. J. H. Thackrah, Mr. Eugene Egly, Mr. F. J. Kidson and others, and the Yorkshire Numismatic Society by Mr. J. Digby Firth, F.L.S.

J. W. T.

FIELD NOTES.

FISHES.

Large Wharfe Trout.—On April 9th, 1910, a large Trout was found recently dead about a mile above Ilkley, in a side pool of the Wharfe. It weighed 10 lbs. 9 ozs., measured 31 inches, and its greatest girth was $15\frac{1}{2}$ inches (see *The Naturalist*, 1910, p. 213). This, I believe, still continues a record for Yorkshire river trout, and more especially for such a fast stream as the Wharfe is. Dr. W. R. Bates, of Ilkley, had this fish preserved, and it may now be seen at the Ilkley Golf Club house.

On December 23rd, owing to a heavy fall of snow, followed by a quick thaw with heavy rain, and aided by a strongish westerly wind (the latter an important factor in assisting a flood here), the River Wharfe rapidly rose higher than I have seen it before (with one exception), during the last ten years. It flooded much of the adjoining land and at places it looked almost like a lake. When the floods subsided, the head of a large trout recently dead, with several inches of spine extended, was found hanging on a tree on the Ilkley Golf Course, which runs close along the north bank of the river and which had been covered by the flood. It looks as if this fish had got left in a pool on the Golf Links by the fast falling floods, and had been found in difficulties by some workman, who for reasons best known to himself prefers that his identity should remain unknown. He therefore decided to take it home, and to save transport, and probably also hide it more easily, he cut—or rather hacked—off its head; leaving several vertebra attached to it. These latter, I am informed by someone who saw them, were quite an inch in diameter. Mr. Ellis Beanlands, the honorary secretary of the Ilkley Angling Club, informs me that he measured the head of this fish, and that at its greatest circumference it was 15 inches. In his opinion it belonged to a fish quite as large, and probably larger, than the 1910 specimen. From the measurements I am inclined to agree with Mr. Beanlands. The 1910 fish was a male and the greatest girth of its *body* was $15\frac{1}{2}$ inches; the 1918 fish was a female, and female trout have smaller heads than males. Yet the *head* of this one measured 15 inches at its greatest circumference! It must have been an enormous fish, and let us hope it made some poor family feel comfortable during that bare Christmas, and the Angling Clubs are only too pleased to get rid of such monsters, which are always cannibals. No doubt, both these large trout came out of a part of the river Wharfe known as "Cockin Deep," a series of deep holes noted for their large fish, about half way between Ilkley and Addingham. Both these large trout belonged to the Loch Leven race. Mr. Beanlands informed me that in January a huge Chub had been

brought out of this part of the river by Otters. The head being intact he took it home, and found that it weighed exactly 1 lb., so that it would belong to a fish that would weigh quite 7 lbs.—a big weight for a Chub.—H. B. BOOTH, Ben Rhydding.

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ENTOMOLOGY.

Derbyshire Butterflies.—We have read with interest Mr. J. M. Brown's note on page 79 of the current volume. It should be mentioned, however, that Lathkil Dale, Bakewell, via Gellia and Haddon all lie to the west of the area with which we dealt. Our western boundary was purposely drawn to exclude the main mass of Carboniferous Limestone. We have never seen *Gonepteryx rhamni* in our area, but Dr. W. J. Fordham tells us that he thinks he saw it many years ago near Chesterfield, and we have come across specimens of this insect in a reputedly local collection.—E. & H. DRABBLE.

Lancashire and Cheshire Entomology.—At a recent meeting of the Lancashire and Cheshire Entomological Society Mr. W. R. Tyerman read a paper on micro-lepidoptera taken during 1917 and 1918 in the Liverpool district. This enumerated 211 species, many of them not having been recorded for South West Lancashire since the publication of the Ellis List in 1890; probably owing to much of the author's collecting having been done in places seldom visited by other lepidopterists. Among other species mentioned *Anacamptis albipalpella*, a single specimen taken at Formby, is an addition to the Lancashire and Cheshire fauna. Mr. W. Mansbridge then read a paper detailing his results in breeding *Aplecta nebulosa* and its varieties; he shewed the different families obtained as the progeny of selected parents and suggested how the black forms of the moth might arise in nature; he also stated that the percentage of black forms bred from wild larvæ obtained from a certain selected area had sensibly diminished in the last four years, while, so far as known, there was no increase in any other part of Delamere Forest. Observations extending over the last fourteen years were embodied in the paper.—W. MANSBRIDGE.

Polynema natans.—In the *Transactions of the Manchester Microscopical Society* appears a record, said to be the first for the North of England, of one of the fairy flies, *Caraphractus cinctus* Haliday. This is an error, for on page 346-347 of *The Naturalist* for 1916 Mr. A. R. Sanderson has an article on the same insect that he had taken at Austwick Moss. Perhaps the synonymy may account for the slip, Mr. Sanderson's article being headed *Polynema natans* Lubbock, but he quotes Haliday's name in the text.—CHRIS. A. CHEETHAM.

NEWS FROM THE MAGAZINES, etc.

We shall be glad to receive newspaper or other reports of *Annual* meetings of any of the Societies in the Northern Counties, which are likely to be of interest to our readers.

With the March number *The Geological Magazine* introduces a new feature 'Editorial Notes,' which are very much after the style of the 'Notes and Comments' in *The Naturalist*.

We notice from the Annual Report of the Spalding Gentlemen's Society for 1918, that the late President, Mr. H. W. Maples, has presented a valuable show case to the Museum at Spalding.

Referring to the note relating to trinomials on page 62 of *The Naturalist* for February, a correspondent suggests that a better name for the Swift would be *opera iii*. For the rest we might suggest an anthem!

After two years' interval owing to war conditions, the British Association for the Advancement of Science will resume its series of annual meetings this year, at Bournemouth, from September 9th to 13th, under the presidency of the Hon. Sir Charles Parsons.

It is gratifying to find that as a result of the agitation brought forward by the members of the Yorkshire Naturalists' Union, the Home Secretary has made an order for the Protection of the Plover, and Plover's Eggs in the West Riding of Yorkshire all the year round.

Mr. Claude Morley writes on Dipterous hosts of Stilpnid Ichneumons, in which Yorkshire examples are referred to, in *The Entomologist* for February. In the same journal Yorkshire, Durham and Northumberland species are described in Dr. J. W. H. Harrison's 'Gleanings from my Notebook, IV.'

With regard to the supposed variety, *exquisita* of *Abraxas grossulariata*, Mr. G. T. Porritt, writing in *The Entomologist's Record* for January, states 'it has no more claim to have another varietal given to it, than have dozens of the many other forms of the variety, and which to name differently would be absurd.'

The death is announced of the Rev. W. Tuckwell, known as 'The Radical Parson.' For twelve years he was rector of Waltham, Lincs., during which period he took a keen interest in the Lincolnshire Naturalists' Union. He was the secretary for the short-lived Lincolnshire Boulder Committee, and had some notes in *The Naturalist* on glacial geology. His portrait appears in the group on page 336 of this journal for November, 1896.

In *The Field* for February 15th, page 185, is a note as to whether pheasants destroy an appreciable number of 'wire-worms.' Two pheasants' crops from different districts and full of wire-worms were sent to the 'shooting' editor, who has counted the wire-worms in one crop and found it to contain 435!! Not a bad day's work for that pheasant, and it would almost prove that pheasants are really fond of wire-worms when they can get them.

The Proceedings and Transactions of the Liverpool Biological Society, Vol. XXXII., has been issued (140 pp., 10/6). Besides the usual record of Proceedings, it contains the 31st Report of the Liverpool Marine Biology Committee, with an address on 'Sir John Murray,' by Prof. W. A. Herdman; Report on the Investigations carried on during 1917, in connection with the Lancashire Sea Fisheries Laboratory; and the Presidential Address of Dr. J. A. Clubb, on 'The Public Museum and Education.'

The excellent principle of awarding departmental clerkships to those members of the Staff of the British Museum who have done original artistic or scientific work outside their ordinary duties, has been recently somewhat extended. Among the latest promotions are Mr. T. H. Withers, F.G.S., whose work on the fossil cirripedes is marked by wide knowledge and considerable literary skill, and whose opinion is sought world-wide; and Mr. T. Wells, whose knowledge of birds was ensured by a long training under the late Dr. Bowdler Sharp.

Naturalist.

2 APR. 1919



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THE NATURALIST.

A MONTHLY ILLUSTRATED JOURNAL OF
NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

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RILEY FORTUNE, F.Z.S.

Contents :—

	PAGE
Notes and Comments :— Problems of Coal; Waste of Coal; Campodeidae: A Plea for Material; Yorkshire Campodeae; A Check List of Myriopods; Diplopodic Synonymy; A Deduction; A Variety Promoted; A Larval Species; Colour-sense of Wasps; Female Fellows; Myrmecophilous Notes... ..	153-157
Aculeate Hymenoptera of a Doncaster Sand Pit—H. H. Corbett	158-160
Cephalozia fluitans (Nees) Spruce, in Mid-West Yorks.—Wm. Hy. Pearson	160
Old Scientific Magazines—T. Sheppard, M.Sc., F.G.S.	161-163
Some Zooecidia of South Denbighshire—A. A. Dallman, F.G.S.	164-166
Ornithological Observations and Reflections in Shetland—Edmund Selous	167-168
The Hearing Organs of Fishes—Joseph Smith, M.R.I.A.	169-173
Common Wild Birds of the Scarborough District—W. Gyngell	174-176
In Memoriam: Thomas Gibbs (illustrated)—E.S.	177-180
Edward Lamplough (illustrated)—T.S.	181
Hull Museum Publications	181
Field Notes :— Allantus perkinsi Morice in Yorkshire; Omphalia telmatiaea in the Rotherham District; Unusual habitat for Limnea truncatula and Physa fontinalis; New Yorkshire Diptera; Aberrations in Lepidoptera; Milk Tooth of Mammoth (<i>Elephas primigenius</i>) from Aldborough	168, 181, 182-183
Correspondence: Former Status of the Starling	183
News from the Magazines, etc.	173, 183, 184
Illustrations	171, 177, 181

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NOTES AND COMMENTS.

PROBLEMS OF COAL.

In *The Nineteenth Century and After*, No. 505, besides an uncommonly interesting series of essays on a variety of topical subjects, is a thoughtful paper on 'Some Problems of Coal,' by Sydney Brooks, which ought to be read by everybody. He writes :—' Shiftlessness and improvidence are the qualities that still characterise our conduct of this prime utility. We have not shown in the coal trade, the key industry of our entire manufacturing fabric, either the pliability and the large designs of the Americans or the patient scientific thoroughness and intellectual grasp of the Germans. It was characteristic that before the War was two months old the burning of bituminous coal in any household was absolutely forbidden throughout Germany. The only solid fuel allowed was coke from by-product recovery ovens. While we were permitting wealth, power and the raw materials of war to vanish in smoke up the chimney, Germany, from her own stores of coal was providing herself with benzine, toluene, liquid fuel for marine boilers and Diesel engines, motor spirit for her land transport, and the essential ingredients for the manufacture of high explosives. We meanwhile continued, as in the slouchy days of peace, to waste these invaluable by-products in our domestic stoves and grates, and incidentally to pollute the air and to purchase abroad vast quantities of fuel and spirit that we ought to have obtained from our own coal. The popular British view of coal is that it is something to be burned. The scientific view is precisely the opposite. It is that coal is too valuable to be burned, that to burn it is to squander it, that the by-products of coal are of greater moment than the coal itself, and that not until these by-products have been extracted should the residuum be used for industrial or domestic purposes.'

WASTE OF COAL.

'If gas producers and gas engines were to replace the ordinary steam-engine and boiler installation, it has been calculated that the amount of coal now consumed for power purposes at mines and factories would be reduced by over three-fourths. Similarly, if we adopted the central heating system in our houses and used an open soft coke fire to supplement hot-water pipes and radiators, over one-half of the coal now burned and largely wasted in our ten million dwellings would be saved. The universal use of a proper grate alone, it is maintained, would save from 20 to 25 per cent. of the coal used. We are all sinners in this wastage of coal—householders, collieries, manufacturers, gasworks—they perhaps are the greatest

criminals of all—railways, every person, every firm, every industry that uses it at all. But these sources of waste, after all, are subsidiary to the main fountain head of extravagance and inefficiency—the organisation, the economics, the preposterous muddle of the industry as a whole.

CAMPODEIDAE: A PLEA FOR MATERIAL.

Mr. R. S. Bagnall, whose work on the more obscure orders of Arthropods is so well known, has favoured us with reprints of his recent papers. In one of these, 'Records and Descriptions of some British Campodeidae,' appearing in the *Entomologist's Monthly Magazine* for May, 1918, nine British species are described, and in some cases illustrated, out of twelve or thirteen species known to the author, but three (or four) new forms are represented by but two or three poor examples, and he has therefore withheld describing them in the hope that further material may come to hand. In this connection he renews his appeal for material, but modifies his former suggestion that one tube should be reserved for one specimen. As most species occur in little families or colonies he suggests that *one tube should be reserved for the members of one little colony, or those from one particular habitat*. Particularly desired are examples from the coast and from the summits of our higher mountains.

YORKSHIRE CAMPODEAE.

These primitive insects have been so little investigated in Britain that an energetic collector should discover species new to Britain or even to science. In a county with such a variety of habitats as Yorkshire this is especially likely to be the case. The list includes records of three species taken in Yorkshire or Lincolnshire by Mr. T. Stainforth. These are *Campodea fragilis* Meinert, from Weedley, near South Cave; *Campodea gardneri*, sp. n., from Hull; and *Campodea lankesteri* Silvestri from Hull, and South Ferriby (Lincolnshire).

A CHECK LIST OF MYRIOPODS.

In *The Journal of Zoological Research* for October, 1918, Mr. Bagnall publishes 'Records of some new British Diplopods and Pauropods, with a Preliminary Check List of the British "Myriapoda."' The students of Myriopoda are much more numerous than formerly so that the list should prove very acceptable. As the author remarks, such lists, even though imperfect, are very useful as a working basis. In using the word 'Myriopoda' as the name of a phylum, the writer recognizes that it includes orders which may ultimately prove to have no near kinship one with another. His list includes the orders Diplopoda (Millepedes), Symphyla, Pauropoda, and

Chilopoda (Centipedes). The number of species listed is ninety two, but this will undoubtedly be increased as more workers appear. As it is, a record is included of a new species of *Brachychaeteuma* (*B. melanops*) which had yet to be described as well as five species new to the British fauna, which are described. These comprise two Diplopods, *Ophiodesmus albonanus* Latzel, from Bath and Swanage, and *Monacobates tenuis* Bigler, from various localities including Leeds, and three Pauropods, *Stylopauropus pubescens* Hansen, *Pauropus furcifer* Silv., and *Allopauropus brevisetis* Silv., all recorded from the north of England.

DIPLOPODIC SYNONYMY.

The three Leachian species, *Brachyiulus pusillus*, *Polymicrodon polydesmoides*, and *Craspedosoma rawlini*, as set out in the list, are in accordance with the synonymy elaborated by Mr. Bagnall in a paper 'On the Synonymy of some European Diplopods (Myriapoda), with special reference to Three Leachian species,' appearing in *The Annals and Magazine of Natural History* for November, 1918. Among Diplopods there are many instances of two species being so closely related as to be practically undistinguishable, except by a dissection and study of the male. It is at once realised how difficult it must be for one who finds a species so closely allied to one already known to decide which of the two was the one described by an older naturalist at a time when present-day methods were not used.

A DEDUCTION.

As a case in point, *Brachyiulus pusillus*, a graceful little millepede with a pair of yellowish stripes down the back, was described by Leach from Edinburgh and London more than a hundred years ago. In recent years Verhoeff has shown that there are two species, externally alike but abundantly distinct, in the structure of the male gonopods, etc., and described one of them as new under the name of *Brachyiulus littoralis*. The dissection of male examples, however, from an abundance of British material, proves that all our examples are referable to Verhoeff's species. Mr. Bagnall claims that by deduction, the British material must be referred to Leach's species and Verhoeff's name rank as a synonym. Further, another name must be found for the *pusillus* of Verhoeff (non Leach).

A VARIETY PROMOTED.

In his memoir, Mr. Bagnall gives what he considers the true synonymy of three of Leach's species. According to the evidence he produces new names will have to be found for *Craspe-*

dosoma rawlini Verhoeff (non Leach), as well as the species referred to above. As existing names (now sunk as synonyms) may be found applicable, use may eventually be made of these, but the writer leaves this matter to be settled later. He has however, suggested a new name for *Craspedosoma simile* Attems (non Verhoeff), as the issue in this case is not complicated by old synonymy. When Attems described it he was aware of Verhoeff's var. *simile* of *rawlini*, but the raising of this form to specific rank rendered it necessary to give another name to Attems' species.

A LARVAL SPECIES.

Mr. Bagnall is convinced that *Polymicrodon latzeli* Verhoeff is the adult of the earlier named *P. polydesmoides* Leach, and that the former name must therefore be sunk as a synonym. In 1912, Verhoeff stated that the occurrence of *P. latzeli* in the North of England was very noteworthy from the zoogeographical point of view since this was the first time that a form of this character had been recorded from northern regions affected by the Ice Age, and was by far the most northerly record for any such Craspedosomid. As a matter of fact the species is equally common in the North and South of England and is known from Yorkshire. Here we find again the familiar truism that the distribution of an organism frequently reflects the distribution of energetic collectors.

COLOUR-SENSE OF WASPS.

At a recent meeting of the Linnean Society, Dr. H. Wager read a paper on 'The colour-sense of wasps.' The experiments described in this paper were made by observing the number of wasps flying towards, and settling upon, pieces of sugar placed upon sheets of coloured paper arranged in various ways. The results show that in seeking their food wasps (*Vespa vulgaris*) are guided by their social instinct, their remembrance of locality, and their power to distinguish conspicuous colours or colour-contrasts. They are probably also guided by smell, but no experiments were made to test this. Leaving out of account the probability that smells play an important part in their activities, the experiments indicate that the governing principles which dominate wasps in their search for food are, first, the attraction exerted by the presence of other wasps; secondly, the tendency always to return to the same place; and thirdly, the attraction due to conspicuous colours and colour-contrasts.

FEMALE FELLOWS.

At a special meeting of the Geological Society of London, recently held in order to consider the following Resolution of

Council: 'That it is desirable to admit Women as Fellows of the Society,' the President said:—'It will be within the recollection of most of the Fellows that the question of the admission of Women to candidature for the Fellowship of the Society has been raised on more than one occasion in the past. It was considered in 1889 and 1901, and again, more systematically in 1908-1909, when a poll of the Fellows was taken and three Special General Meetings were held, with inconclusive results. It is generally recognized that the course of events since these dates has materially changed the situation. Women have been welcomed to our meetings as visitors, and we have had many examples of their qualifications for Fellowship in the excellent papers which they have from time to time contributed to the Society. The value of these papers has been appreciated by all geologists, and has been repeatedly acknowledged by the Council in its Awards. Therefore, in the opinion of the Council, it is no longer reasonable to maintain a sex-bar against qualified candidates for the Fellowship of the Society, and I am empowered by the Council to submit the above-mentioned Resolution for your consideration.' A ballot was then taken, and the Resolution was declared carried.

MYRMECOPHILOUS NOTES.

In his 'Myrmecophilous Notes for 1918,' reprint of which from *The Entomologist's Record* (Vol. XXXI., Nos. 1 and 2) we have just received, Mr. H. Donisthorpe has several North of England references. The Rev. E. A. Woodruffe-Peacock sent him specimens of the var. *ruginodo-laevinodis* Forel, of *Myrmica laevinodis* Nyl. taken at Cadney, North Lincolnshire, in June, 1917. This is a new county record of this variety. Mr. Butterfield sent a gynaeceid worker of *Leptothorax acervorum*, which was taken on a rock at Rumbolds Moor, Yorkshire, on March 20th, 1918, and a very curious female of the same species taken in a mixed nest of *L. acervorum*, and *Myrmica ruginodis* at Mauley Bog, Keighley, on April 26th, 1918. This is a small dealated female, rather dark in colour, and is exceedingly remarkable in that it possesses no trace of a petiole or a post-petiole. *Acanthomyops alienus* Först. is recorded from Wallasey, and is a new record for Cheshire. References are made to the occurrences of certain Diptera found in Yorkshire in association with ants, by Mr. Butterfield. One is a species of *Ceratopogon* bred from pupae taken on the underside of a stone over a *fusca* nest at Grassington, on May 5th, 1918. An example was submitted to Mr. J. Collin, who is of opinion that it is *Ceratopogon braueri* Wasmann., a species new to Britain. In the same locality Mr. Butterfield found 70 pupae of the Dipteron, *Microdon mutabilis* on the underside of a stone situated over a *fusca* nest.

ACULEATE HYMENOPTERA OF A DONCASTER SAND PIT.

H. H. CORBETT.

ABOUT $2\frac{1}{4}$ miles from Doncaster, on the left side of the Bawtry Road, is an estate that has been laid out for residential purposes. Considerable numbers of more or less 'undesirable villainous residences' have been erected, but there are still several new roads not yet built upon. By the side of one of these is a somewhat extensive quarry whence sand has been dug. The base is of undisturbed Bunter Sandstone, while the upper portion is weathered and altered into loose, friable sand. Little or no excavating has taken place for the past two or three years, and the ground in front of the quarry face is clothed with vegetation, while the face itself has assumed the condition of rest such as suits the taste of burrowing aculeates. Throughout the spring and summer there is a sequence of flowers beloved of Hymenoptera, the following predominating in succession:—*Taraxacum*, *Ornithopus*, and *Crataegus* followed by *Hypochaeris*, *Hieracium pilosellum* and *Trifolium repens*; these are succeeded by *Senecio jacobaea*, *Carduus nutans* and *Trifolium arvense*, and these together with *Leontodon autumnale* drag on throughout the autumn.

A visit paid to the place just when the dandelions were beginning to flower convinced me that it should prove a happy hunting ground for the hymenopterist, and during the season I have run over to it whenever time and weather permitted. It has well repaid my visits, for although I have not found any insect in abundance, nor anything rare, yet I have seen a considerable number of interesting species, several of which do not appear in the list of Yorkshire Hymenoptera in 'The Victoria County History.'

Taking the species seen in the order that they appear in Saunders' monograph they are:—

- 1.—**Pompilus pectinipes* Smith (*chalybeatus* Schiödte). Often seen but like all Pompilidæ, difficult to catch, especially to a short-sighted man. They generally occurred in the upper part of the quarry. There they flew and ran with great rapidity. I did not find Saunders' recommendation for capture by striking downwards when they settle to be good; my most successful method being by a side stroke when flying.
- 2.—**Priocnemis (Salius) parvulus* Dahlb. This species was in habit like the last; indeed, until examined at home I never knew which I had got.
- 3.—*Tachysphex pectinipes*. Not nearly so active as the former species, but still very lively, especially when in the net. They frequented a lower and harder part of the quarry than the Pompilidæ.
- 4.—*Diodontus minutus* Fab. I only took one example of this common insect.
- 5.—**Oxybelus uniglumis* L. Certainly the most abundant fossor in this locality. First appearing in May and lasting throughout the

Naturalist,

season. They burrowed chiefly at the lower part of the soft sand. In flight they are comparatively slow, but are very quick runners. Frequently their dipterous prey was quite as large as themselves, yet they did not seem to be in the least inconvenienced by their burden. They varied greatly in size and in colour, some having the pale spots so yellow as to raise hopes of their being *mandibularis*.

- 6.—*Crossocerus wesmaeli* V. d. Lind. This little species was fairly common and made its burrows in the soft sand just below the surface humus at the top of the quarry.
- 7.—*Hoplocrabro 4-maculatus* Fab. This was also fairly common and of habit similar to that of *wesmaeli*.
- 8.—*Thryeopus cribrarius* L. This, which is probably the commonest and most widely distributed fossor near Doncaster, abounding on umbelliferæ in all sandy districts, was remarkably scarce at Bessacar. I only saw one, and this I failed to catch.
- 9.—*Ancistrocerus trimarginatus* Zett. This was the only species of wasp that I saw. In habit it much resembled a *Nomada* frequenting, as they did, the upper part of the bank, where it flew backwards and forwards several times before finally settling at its hole.
- 10.—**Colletes fodiens* Kirb. This pretty little bee I found on flowers of *Senecio* and *Trifolium arvense*. How it derived any benefit from the latter flower I do not know, as its tongue is too short to reach the nectary. I never succeeded in tracing it to its burrow.
- 11.—*C. daviesanus* Smith. I took one specimen of this insect, but unfortunately it was destroyed by an accident.
- 12.—*Sphecodes gibbus* L.
- 13.—*S. subquadratus* Smith.
- 14.—*S. pilifrons* Thoms.

These three species were all common, and, needless to say, I did not distinguish them in the field. *Subquadratus* was the only one seen in the spring, when females, many of which had their wings much torn, were flying in company with female *Halictus rubicundus*. In August, both sexes of all these species were on the wing. On August 8th, at 11.45 a.m., I took *pilifrons* in cop. The pair fell down the face of the quarry and I thought that they were some species of fossor with its prey, but on getting them into a glass tube, I found that they were ♂ and ♀ *Sphecodes*. Is the question of the inquiline nature of *Sphecodes* yet solved? On one occasion I certainly saw a ♀ *gibbus* making a burrow.

- 15.—*Halictus rubicundus* Christ. Of this very common species, females, many much worn, were common on flowers of dandelion in May and June. At the same time, they were to be seen laden with pollen, entering burrows in the higher part of the bank. In August, the ♂s were common on flowers of ragwort, and ♀s about the burrows.
- 16.—*H. cylindricus* Fab. ♂s were common on flowers of ragwort, but I did not see any ♀s.
- 17.—*H. tumulorum* Linn. ♂s also common on ragwort.
- 18.—*Andrena albicans* Kirb. By far the commonest of the spring andrenas. Both sexes frequent on dandelion flowers.
- 19.—*A. rosae* Panz. I only met with one of this abundant species at Bessacar, but they were common in the suburbs of the town on the pavement below sycamores, on the flowers of which they seem to get drunk.
- 20.—*A. chrysosceles* Kirb. Was frequent on dandelions.
- 21.—**A. denticulata* Kirb. Both sexes common on ragwort and thistles in August.
- 22.—*Nomada alternata* Kirb. I am rather 'shaky' in the matter of nomadas, but so far as I have made out, this is the only species that I saw at Bessacar. They seemed to be attached to *A. chrysosceles*.

- 23.—* *Panurgus ursinus* Gmil. Of this species, which usually forms large colonies, I only saw one.
- 24.—*Epeolus productus* Thoms. A few of these pretty little bees were swept off ragwort and *Trifolium arvensis*, and they were also flying about the face of the quarry. When on the wing or in the net, they closely resemble *Oxybelus uniglumis* and might easily be overlooked.
- 25.—*Megachile circumcincta* Lep. Was fairly common. I saw a ♀ flying with a large piece of rose leaf which she took into a burrow in the hard lower sandstone.

These are all the species that actually inhabited the quarry, but on flowers were also taken: *Psithyrus vestalis* Fourc., *Bombus agrorum* Fab., *B. derhamellus* Kirb., *B. pratorum* L., *B. lapidarius* and *B. terrestris* L., making a total of over 30 species of aculeates.

Species not named in 'The Victoria County History of York,' are marked*.

I am indebted to the Rev. F. D. Morice for naming doubtful species.

—: o :—

CEPHALOZIA FLUITANS (NEES) SPRUCE, IN MID-WEST YORKS.

WM. HY. PEARSON.

SOME time ago Miss Annie Dixon, of the Manchester Microscopical Society, sent me a small collection of hepatics, made in the neighbourhood of Ilkley, in September last year. Most of them were of the usual common species, but among them were specimens of the above species collected on boggy ground near the Upper Tarn, Ilkley.

It has been recorded from many counties, and I have no doubt is generally distributed in the British Isles, but been passed over as a form of *Jungermannia inflata*, from which it is however very distinct.

Dr. Spruce ('On Cephalozia,' 1882) well summarises their differences, which are, 'for *C. fluitans*, the stem rooting by numerous stout flagella; the branches, whether foliferous, all postical; the longer, narrower and more laxly-reticulate leaves; the constant presence of underleaves; the cladocarpous inflorescence; the tristichous female bracts, toothed at the base, and the innermost embracing the perianth; finally the lineari-fusiform, trigonous, thin perianth. But in *J. inflata* there are no flagella; the branches arise variously from the mid-axil of a leaf, or from its postical angle, and the female flowers are borne on the apex of the stem or of long leafy branches; there are no underleaves at all, except very rarely a small subfloral one; the bracts are distichous, conformable to the leaves, and usually remote from the perianth; and the perianth itself is pyriform, inflated, and obscurely 4-5 plicate only at the very apex; it is besides composed of two strata of cells up to one-third of its height.'

OLD SCIENTIFIC MAGAZINES.*

T. SHEPPARD, M.Sc., F.G.S.

NATURALIST'S NOTE BOOK.

Since briefly referring to these volumes in 'Yorkshire's Contribution to Science' (p. 141), I have obtained a set of the publication and am able to give more detailed information. The full title of the first volume is 'The Naturalist's Note Book for 1867. A monthly record of Anecdotes, Theories, and Facts relating to Natural Science. Together with Notices of New Books, Reports of the Meetings of Learned Societies, Original correspondence, and Descriptions of new inventions. . . Office: 1 Racquet Court, Fleet Street, London.' The publication is a small quarto, in double columns, the matter being much after the type of Hardwicke's *Science Gossip*. The Preface, dated January 1868, with vi. pages of Index, precedes a volume of 356 pp., which comprise the twelve monthly parts issued in 1867. No Editor's name is given to this, or to the succeeding volumes. Volume II., for 1868, bears the imprint 'London: Reeves and Turner, 196, Strand,' and contains 382 pp. and the frontispiece 'Nest of the Tom Tit.' Vol. III., for 1869, has a similar imprint, and has a frontispiece and 376 pages. In the Preface it is 'Our painful task to inform many friends that this "Note Book" in its present shape ceases to exist with this volume. . . . Early in January will be issued the first number of a new series of the 'Naturalist's Note Book.' It will be an 8vo (size of the 'Cornhill'), will contain 48 pp. . . . and the price will be sixpence.' I cannot trace, however, that this projected series ever appeared.

GEOGRAPHY.

In addition to its well known *Journal* the Manchester Geographical Society has published a small royal octavo journal called 'Geography: being Notices and Notes of the Manchester Geographical Society.' No. 1 was published on September 30th, 1895 (8 pages), and the last part (No. 93 and 94, dated June and July, 1904) contains an In Memoriam notice of the Society's late Secretary, Eli Sowerbutts. The publication was issued each month during the winter, and occasionally during the summer, and was commenced to signalise the Society's entry into its larger premises in St. Mary's Parsonage. 'The arrangements of the Society' were then published upon cards, the first, dated October 6th, 1904, stating that 'The issue of *Geography* will for the present be discontinued.'

MOSS EXCHANGE CLUB.

From a prefatory note in the reports and extracts from the

* For previous notice see *The Naturalist* for 1918, p. 308.

Club's note books for the years 1896-7-8, published in 1899 at Stroud (20 pp.), we learn 'The Moss Exchange Club was founded in the year 1896, in response to proposals made by me in the "Journal of Botany," Feb., 1896, p. 88 (see also pp. 135 and 368); "Science Gossip," Dec., 1895, p. 272; and "Irish Naturalist," Feb. 1896, p. 55.' Twenty-three members had been enrolled by the end of the year, when the first Exchange took place. Rules were drawn up after the model of those of the two British Exchange Clubs for seed plants. There are now 36 members.—C. H. Waddell, Hon. Sec., Feb., 1899.'

The Society appears to have published similar annual reports, that for 1917, published at York, being the 22nd, though some covered more than one year; nineteen in all have been issued. Mr. W. Ingham, B.A., became Secretary in 1903, when he took the place of Mr. Waddell, who had resigned. In addition to the valuable information relating to the distribution of mosses which occur in these reports, the Society has also published (1) 'Census Catalogue of British Hepatics,' compiled by Symers M. Macvicar, 1905, York, 24 p.; (2) Ditto, 2nd edition, by W. Ingham, Darwen, 1913, 36 pp.; (3) 'A revised Key of Hepatics of the British Islands,' by S. M. Macvicar, Eastbourne, 1906, 20 pp.; (4) 'A Census Catalogue of British Mosses,' by Prof. Barker and W. Ingham, D. A. Jones, R. H. Meldrum, Rev. C. H. Waddell, Canon Lett and E. D. Marquand (York, 1907, 64 pp.); (5) 'Synopsis of the European Sphagna,' by J. A. Wheldon, Darwen, 1917, 42 pp.; (6) 'An Exchange List of European Mosses,' compiled by W. E. Nicholson, 4 pp.

HECKMONDWIKE NATURALISTS' SOCIETY.

In December, 1908, the Heckmondwike Naturalists' Society issued a list of 'Plants and Shells of the Spen Valley,' by W. Balmforth Haley (Cleckheaton, 20 pp.). Preface on p. 1; Plants, pp. 2-10; Land and Fresh-water Shells, pp. 12-15.

THE NUMMULOSPHERE.

The first part of this extraordinary publication, containing 104 pp. and 3 plates, appeared in 1913, and bears the title 'The Nummulosphere: An account of the Organic Origin of so-called Igneous Rocks and of Abyssal Red Clays by R. Kirkpatrick,' sold by Lamley & Co., 2/-, 104 pp. During the same year appeared part 2, with the sub-title 'The Genesis of the Igneous Rocks and of Meteorites (Plankton and Benthos),' by the same author, 16 pp.(1/-), with a plate illustrating 'Plankton organisms found in Igneous Rocks, and in Meteorite.' In 1916 appeared part 3 with the sub-title 'The Ocean Floor or Benthoplankton,' 319 pp. with 27 plates, and numerous illustrations in the text, price 10/-. The author is evidently

an enthusiast and somebody has evidently spent a considerable sum of money in riding his hobby, but we fear that the old-fashioned Geologist with his knowledge of the origin of igneous and sedimentary rocks is not likely to be converted. From a prospectus we learn that in the author's opinion, a discontinuous belt of nummulitic limestones of Tertiary age, and thousands of feet thick in places, extends across the Eastern Hemisphere from Morocco to Japan. Apart from a few doubtful specimens, nummulites have not hitherto been known to exist before the Tertiary Era. The supposedly sudden appearance of these gigantic deposits of Eocene nummulites has been referred to by d'Archiac as 'The Nummulitic Enigma.'

'From a purely geological point of view the enigma is now solved. For chalk is mainly a deposit of nummulites, and so also are most of the limestones down through the ages to Precambrian. The mysterious "morpholiths" of Ehrenberg are particles of nummulites. Chalk flint is mainly formed of silicified nummulites. The silica is derived partly from the skeletons of organisms.

In the neighbourhood of hot magmas silica in limestones combines with magnesia, etc., to form silicates, the latter being sometimes re-deposited in zones. Specimens of Eozoon are simply lumps of nummulitic limestone with silicatic zones. "Eozoon" structure is common in archæozoic, but occurs also in more recent limestones (*e.g.*, Monte Somma bombs).

Igneous rocks are silicated masses of nummulites. The heat of molten magmas may be derived from one or from several sources, *viz.*, chemical, mechanical or radioactive. The silicates of the igneous rocks are the end term of a long series of chemical changes.

Meteorites, whether stony or metallic, are replete with nummulitic structure, and are very probably ejects from the nummulosphere of this planet.

The sedimentary rocks are chiefly composed of particles and fragments of mineralised nummulitic deposits.

The earth is an ocean planet. Its known rind or crust is a deposit of oceanic and organic origin, *viz.*, a "benthoplankton" deposit formed of mineralized nummulites.'

We find the following note on page 20 of part 3: 'Anything of Scientific value in "Nummulosphere," Parts 1 and 2, is incorporated in part 3. The first two parts, which are no longer of use, have been of the nature of stepping-stones, that have helped me, in spite of much initial error, to arrive at the truths explained in the present work.' At the top of the prospectus is the following quotation: 'What is wanted is, in fact, the skilled eye Hence the need of a long and patient training of the sense of sight. The Abbé Th. Moreux.' To this we can only say, Amen.

SOME ZOOCECIDIA OF SOUTH DENBIGHSHIRE.

A. A. DALLMAN, F.C.S.

IN the course of an investigation of the flora of Flint and Denbigh the writer spent some weeks—during parts of May, August, and September—in 1918, in the latter county. The tiny hamlet of Tregeiriog in the secluded upper part of Dyffryn Ceiriog (*i.e.* the Ceiriog Valley) served as a convenient centre. Much of this time was devoted to local observations in regard to the floral biology, pollination, and insect visitors, of various Phanerogamia. Adverse weather rendered investigations on floral biology impossible on some days, and consequently I made notes on the plant galls seen chiefly during August and September.

I am not aware that anything has been published in regard to Welsh zoocecidia—certainly not so far as North Wales is concerned. The present contribution makes no pretence at completeness, and the number of species only represents a gleanings of the larger total which could certainly be found in South Denbighshire by detailed investigation. In the following list I have generally followed the nomenclature of Monsieur E. Houard's *Les Zoocécidies des Plantes d'Europe* (1908-1913). I have also made occasional use of Swanton's *British Plant Galls* (1912).

Most of the galls were observed at an average altitude of 900-1000 feet above sea-level.

HYMENOPTERA.

Biorrhiza pallida Hartig. The familiar 'Oak Apple.' Common on *Quercus pedunculata* Ehrh.; one of the few galls which receive a popular designation in Welsh. In Dyffryn Ceiriog they are known amongst children by the barbaric (half Welsh, half English) name 'Marbles Coed' (*i.e.* Wood Marbles).

Cynips kollari Hartig. On *Quercus pedunculata*, Ehrh.

Dyrophanta divisa Hartig. On leaves of the two Oaks, *Quercus pedunculata* Ehrh., and *Q. sessiliflora* Salisb.

Neuroterus lenticularis Oliv. (*N. baccarum* L. form *lenticularis*). Common Spangle Gall. Frequent on leaves of *Quercus pedunculata* Ehrh.

Pontania pedunculi Hartig. On leaves of *Salix Caprea* L., and *S. cinerea* L.

Rhodites eglanteriae Hartig. On leaves of *Rosa canina* L.

R. rosae L. On *Rosa arvensis* Huds., and *R. canina* L. This common and conspicuous gall ('Robin's Pincushion') goes by the name *Ystol Robin Goch* (*i.e.* Red Robin's Stool) in South Denbighshire.

DIPTERA.

Contarinia craccae Kieff. Affecting flowers of *Vicia Cracca* L. which are much malformed and enlarged. Between Tregeiriog and Llanarmon Dyffryn Ceiriog.

C. heraclei Rubs. Foliage of *Heracleum Sphondylium* L.

C. steini Karsch. Frequent in flowers of *Lychnis dioica* L. Also seen in flowers of *L. alba* Mill, by Tregeiriog Farm.

- Oligotrophus annulipes* Hartig. A very distinctive gall on leaves of *Fagus sylvatica* L. Sparingly in the little wood just above and north of Tregeiriog; altitude about 1,000 feet. Sparingly above right bank of River Ceiriog between Tŷ-du and Pont Ricket. By the little cemetery at Tregeiriog.
- O. bursarius* Bremi. Only a few examples seen. On leaves of Ground Ivy (*Nepeta hederacea* Trev.) between Llansantffraid Glyn Ceiriog and Tregeiriog.
- O. capreae* Winn. On *Salix Caprea* L.
- O. taxi* Inchb. On the yews in the churchyard at Llancadwaladr.
- Perrisia crataegi* Winn. Very common on Hawthorn, causing malformation about the growing points of the stems.
- P. filicina* Kieff. On pinnules of Bracken (*Pteris aquilina* L.) above the Ceiriog, on Tŷ-newydd Farm.
- P. fraxini* Kieff. On Ash by the Ceiriog above Tŷ-du Tregeiriog.
- P. galeobdolonis* Winn. 'Rounded or oval gall about the size of a pea, formed of two leaves with margins in juxtaposition.' On *Lamium Galeobdolon* Crantz. by roadside near Llwyn Pen Llan.
- P. ulmariae* Bremi. Affecting foliage of *Spiraea Ulmaria* L., at Pont Ricket.
- P. urticae* Perris. Seen on nettle (*Urtica dioica* L.) at Chirk, Pont Fadog, Dôl yWern, and Llansantffraid Glyn Ceiriog. Apparently rare in the valley above Llansantffraid but noted by the little cemetery near Tregeiriog.
- P. veronicae* Vallot. Very common on *Veronica Chamaedrys* L.
- P. viciae* Kieff. On *Vicia sepium* L., the leaflets becoming revolute and enlarging to form firm pod-like galls. Pont Ricket.
- Rhopalomyia ptarmicae* Vallot. Transforming the entire inflorescence of *Achillea Ptarmica* L., the various capitula coalescing and giving rise to a large spongy, pubescent, and somewhat globular cecidium. Close to the River Ceiriog by Tregeiriog Farm.

HOMOPTERA.

- Adelges abietis* Kalt. Common on Spruce (*Picea excelsa* Link.)
- Aphis geranii* Kalt. Causing malformation of flowers of *Geranium molle* L. on hillside above road by Llwyn Pen Llan.
- A. urticae* Fabr. Affecting *Urtica dioica*, L.
- Brachycolus stellariae* Hardy. On *Stellaria Holostea* L., at Llwyn Pen Llan and elsewhere. Apparently not uncommon. The same insect was also noticed galling *Holcus* (probably *mollis* L.) close to the River Ceiriog by Tregeiriog Farm. In this case the leaves had a distinctive erect and tufted arrangement. They 'embrace each other at their bases like those of a sedge. In this manner a kind of boat is formed for the protection of the colony.'
- Psylla buxi* L. On Box (*Buxus sempervirens* L.) causing the clusters of terminal leaves to be deformed, each being incurved so as to become more or less hemispherical.
- Trioxa galii* Forster. Galling *Galium palustre* L., by the river at Tregeiriog and also by stream at Llanarmon Dyffryn Ceiriog.

ACARINA (Gall Mites).

- Epitremerus trilobus* Nal. On leaves of Elder (*Sambucus nigra* L.). Common.
- Eriophyes avellanae* Nal. A very common gall-maker causing several distinct forms of cecidia on Hazel (*Corylus Avellana* L.). The enlarged deformed buds (Houard, No. 1056) due to this mite seem to be ubiquitous in South Denbighshire.
- E. brevitarsus* Focken. Galling leaves of Alder (*Alnus glutinosa* Gaertn.). Dyffryn Ceiriog.
- E. euaspis* Nal. Deforming leaves of *Lotus corniculatus* L., on hillside

west of Llwyn Pen Llan, at about 950 feet elevation. Mr. Swanton to whom I am indebted for the identification, informs me that these are the first British specimens he has seen. The galls agree well with Houard's description: 'Étroit enroulement marginal ou reploirement du limbre par en haut, avec pubescence anormale à la face inférieure. La partie attaquée est très épaisse et colorée en jaune ou en rouge.'

- E. fraxini* Karp. On Ash (*Fraxinus excelsior* L.), causing marked deformation and hypertrophy of the flowers attacked, and the inflorescence forms curious conspicuous cauliflower-like growths. At first of a pale colour and soft consistency, they gradually darken and assume a leathery or even woody hardness as the season advances. On one Ash tree only by the river just below Tŷ-du. On an Ash by the roadside between Llwyn Pen Llan and Pont Ricket.
- E. gali* Karp. Affecting leaves of *Galium Aparine* L. In garden at Tŷ-du and also in many places between Pont Ricket and Llanarmon Dyffryn Ceiriog.
- E. goniothorax* Nal. Common on Hawthorn (*Crataegus monogyna* Jacq.) in the hedges.
- E. laevis* Nal. Common on foliage of Alder (*Alnus glutinosa* Gaertn.).
- E. macrorrhynchus* Nal. On leaves of Sycamore (*Acer Pseudo-platanus* L.).
- E. nalepai* Focken. Perhaps not quite as common as *E. laevis* Nal. On leaves of Alder. By Ffordd Nant Caled Gwynt. Along the River Ceiriog.
- E. padi* Nal. Forming little nail-like galls on the leaves of Bird-Cherry (*Prunus Padus* P.) by Tŷ-du.
- E. pyri* Pagenst. Causing pustular galling of leaves of cultivated Pear at Tŷ-du. On Rowan (*Pyrus aucuparia* Ehrh.) Houard, No. 2912; on Tŷ-newydd Farm.
- E. ribis* Nal. Black Currant bushes in various gardens shewed evidence of the activities of this familiar gall mite.
- E. rudis* Can. Affecting buds of Birch (*Betula alba* L.). Not uncommon.
- E. similis* Nal. On leaves of Sloe (*Prunus spinosa* L.) and another uncertain *Prunus* which occurs in various parts of Dyffryn Ceiriog Houard, No. 3294.
- Phyllocoptes acericola* Nal. On Sycamore (*Acer Pseudo-platanus* L.).
- P. fraxini* Nal. On Ash (*Fraxinus excelsior* L.) in hedge between Tŷ-du and Tregeiriog.

The prevalent hedgerow *Prunus* showed extensive blistering and curling of the foliage but I failed to detect the agent responsible. Mr. Swanton, to whom specimens were submitted, reported:—'The condition of these leaves much recalls that of leaves attacked by *Aphis*. In one of the curled ones I found what appears to be the skin of an *Aphis* larva. At least two species of aphides attack *Prunus spinosa* in Spring and then migrate to other plants.'

Another unidentified zooecidium was encountered sparingly on Tŷ-newydd Farm, Tregeiriog. This was on Meadow Vetchling (*Lathyrus pratensis* L.) and had the appearance of an elongated swelling of the stem—chiefly about a node or a little beyond—but I have failed to identify the contained larva.

ORNITHOLOGICAL OBSERVATIONS AND REFLECTIONS IN SHETLAND.

EDMUND SELOUS.

(Continued from 'The Naturalist' for 1918, page 383).

OCTOBER 21ST, 1911.—What are Cows to Starlings here? How do they benefit by them? This is not quite clear. This afternoon I watched them for some time, following up the cows as they fed, and feeding near them. But with what object? Mr. Hay was inclined to think that the Cow, in browsing the grass, loosened its roots, and that the Starlings were thus enabled to get at various insects—beetles, larvæ, etc.—that might be found amongst them. This sounds likely, but the following are my observations on the connection, in practice. The Starlings, in a little band, would come flying to one or another of the cows, but whilst they often came down close to, or near them, they did not peck about where they had actually been browsing. Instead of that, they always got a little way out from them, and, even at the nearest, never, or so rarely as to make it of no significance, walked actually in their track. Again, they would often descend in front of them, and spreading to one side or another, as the Cow came on, here again, they just missed what *ex hypothesi* they had come for. On perhaps three occasions a single bird got just by one of the feet of a Cow, but I was not able to make out that it actually pecked at any part of it—hoof or hair—and my impression is that it never did. As the Starlings fed, they spread out and became more disseminated, and it was owing to this, I think, and not designedly, when one came close to a Cow's foot. Having come down near beside a Cow, or before or behind it, but not actually in its track, and having then spread away, here and there, feeding but still without getting into it—by chance, I suppose, but showing that this was not the object—the Starlings would fly to some little way away and, for some time, feed there precisely as they had been doing when near the Cows. Then, all at once, they would come flying back to them—generally to some one in particular, and then, perhaps, some to another, when what I have described recommenced. In short, though in an irregular and desultory manner, they most certainly followed up the cows, and kept with them, I could not discover—or rather it was not at all apparent—that they got anything extra in the shape of food by so doing. It seemed as though they liked the Cows' company and accompanied them for that reason. They fed in one uniform manner, whether they were near the Cows or some way away from them—viz., by light, irregular peckings

bestowed on the ground all about. Say that, speaking generally, they get more food where Cows graze, yet this does not explain their actions such as I have described them, or the pleasure which they seemed to derive by being with this or that Cow. Rather they seemed to think this enjoyable—fun—than to be actuated by utilitarian motives. Cows, I may say, are as carefully treated here—‘dipped’ and scraped and otherwise attended to—as are sheep; and even if this were not so, yet, though the Starlings often walked, for a little, close beside them, it was never so close that anything falling from their bodies would have fallen in their path. Nor did they ever, whilst I watched them, perch on their backs, though this they often do as with sheep. I have little doubt, however, that what I have said as to this* must apply here too. Thus neither the insect parasite theory, nor that as to the loosening of the roots of the grass, through browsing, explains why the Starlings accompany the Cows in just the way that they do accompany them. Only one other hypothesis of the utilitarian order is, as it seems to me, open. As I have previously noted,† cow-dung is certainly probed and investigated by the Starlings here, who, no doubt, find their account in it. They may prefer it fresh, and by following the Cows, as they browse, be from time to time supplied with this species of manna. I should have been glad to put this speculation to the test, but I watched and waited till I grew weary without any such incident occurring. When one considers, however, how conspicuous such provender is, and how easily attainable by walking or flying anywhere about where Cows graze, it does not appear to me likely that they are personally shadowed with this object in view.

(To be continued).

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Allantus perkinsi Morice in Yorkshire.—This species is described by the Rev. F. D. Morice (*E.M.M.*, 1919, p. 62) as new to science, but has previously been confused with *arcuatus* Forst. It may be known from the latter by its black scutellum, differently formed saw and different sculpture of the head and mesonotum. On looking through my series of *arcuatus* I find three specimens (2 ♂ 1 ♀) taken at Askham Bog, 25th July, 1918. Mr. Morice kindly verifies the identification. On the same day Mr. Walsh and I took some sawfly larvæ feeding on *Iris*, but failed to rear them. Mr. Morice says that, no doubt, these were larvæ of *Rhadinocera micans* Klug and if so the species is new to the county.—Wm. J. FORDHAM, M.R.C.S., L.R.C.P., F.E.S., Bubwith.

* See ante, p. 386-7.

† See ante, p. 318.

THE HEARING ORGANS OF FISHES.

JOSEPH SMITH, M.R.I.A.

(Continued from page 62).

The auditory organ, the nerve of which belongs to the hind brain (probably derived from the sensory root of the spinal like cranial nerve) is entirely absent in the Amphioxus. In its simplest form, it is a membranous sac—membranous labyrinth—containing fluid and otoliths. The posterior part of the sac is usually prolonged into three semicircular canals, while the anterior part, which in many cases is separated as a *sacculle*, gives off a prolongation which forms a *cochlea*. The auditory organ of fishes consists only of the labyrinth, and in the Teleosteans, bony fishes—Ganoids—lies partly in the cranial cavity surrounded by fatty tissue. It is worthy to note that in *Cyprinidæ*, Carp, *Characinæ*, bony Ganoids, *Siluridæ*, Catfishes and others, the labyrinth is connected with the swimming bladder by a chain of small bones.* The hearing bones of fishes are characteristic in different species, and furnish a very interesting study in comparative anatomy. Found detached as fossils, they would be puzzling specimens to anyone unacquainted with existing forms. Some of the bones are quite microscopic, as those of the *Sprat*, while others are of considerable size, those of the hake attaining more than an inch and a half in length. They are contained in cartilaginous capsules under the protection of the post frontal bones of the skull. Although the organs of hearing are well developed in all fishes, they are not however always to be met with, the membranous labyrinth of the lamprey has only two of these canals, and in the Myxine there is only one of these canals, but in all other fishes there are three; they communicate with a vestibule in which are contained the bony plates called Otoliths. There are usually three of these flattened, somewhat oval, organs, two being larger than the other. When considering the functions of the otoliths, it will not be out of place to contrast the life of the fish and its otoliths; to compare the size of these stones in the different fishes more especially when their habits are similar, and even when totally dissimilar. Yet the otolith whilst maintaining its family resemblance is extremely different in different families, and in this question the size of the fish does not establish any corresponding rule, that its otoliths would be larger or smaller than those of another family, but of a larger or smaller, size, *e.g.*, the Smelt, *Osincrus eperlanus*, has a larger otolith, though a

* Claus. 'Elementary Text Book of Zoology.' Translated by Sedgewick and Heathcote, Vol. II., pp. 121 and 139. London, 1885.

smaller fish than the *Auxis rochei*. The comparison as to the size of the otolith with the size of the fish, although sufficiently obvious in the above mentioned case, hardly admits of a definite accuracy, but it is rather one that strikes the eye when dissecting out the otoliths. The otoliths from a *Palymis sarda* 28 ins. long, and from an *Auxis rochei* 24 ins. long, are, the first comparatively, the second actually smaller than the otolith of the Flying fish *Exocætus paecilopterus*. As a further contrast, we may take another sample, viz., those of the Horse Mackerel, *Caranx trachurus*, and the Bass, *Morone labrax*, the otoliths in these fishes are large, as in the *Beryx splendidus*, or *Sebastes norvegicus*. The former two frequent the estuaries of the rivers and the coast, the two latter very deep water.*

The more commonly known flat fish have all comparatively large otoliths, and the other fishes that live at the bottom of the sea, the Weever, Gobies, etc., each have large otoliths; we have several kinds of fishes frequenting the sea-bed, and each supplied with a fairly large otolith. For a comparison, we must go to the Blenny family many of which live on the bed of the sea, yet they have all small otoliths. The Blenny, *Blennius guttorugine*, and the *Gobius paganella* are two fishes which vary very little in size; their mode of life is very similar on the bed of the sea, yet the otolith of the Goby is manifestly the larger. Again the Cod, *Gadus morrhua*, living and feeding at the bottom of the sea, in deep water, the *Scombridæ*, the mackerel family, living in the surface strata of the deep sea, where they find their prey, have small otoliths. The Sparidæ, the Bream family, have, as a rule, large otoliths. Now take the family *Salmonidæ* :—

The Smelt, *Osmerus sperlanus*.

The Salmon, *Salmo scaber*; and

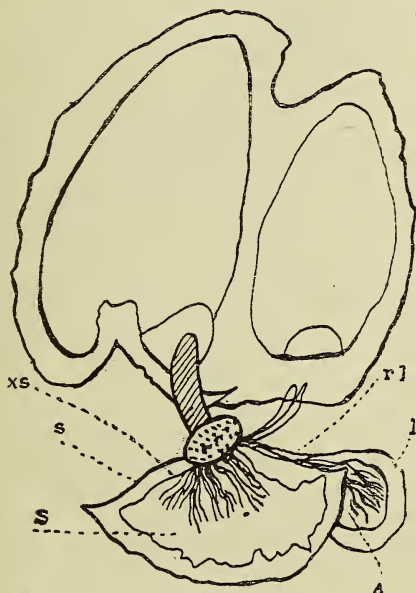
The Grayling, *Thymallus vulgaris*.

Their modes of life are different; the Smelt frequents the salt waters, the Salmon spends its life in salt and fresh waters, while the Grayling lives in fresh water only. Taking a comparison, the fresh water inhabitant has the largest otolith, but they are all fairly large.

The arrangement of the various stones is as follows: the large rounded stone, the *lapellus*, is on the left, the *asteriscus* on the right, and the *sagitta* in the middle and under the other two. A relation has been sought by comparing the power of vision of a fish, as deduced from the muscles attached to the eyeball, with their power of hearing. In many fishes the recti-muscles of the eyeball are attached to the skull, at the back of the eye, giving a short range of movement. This is

* Comparisons of Otoliths found in Fishes, by Colonel C. E. Shepherd. *The Zoologist*, 1910, pp. 292, et seq.

seen in the *Gadidæ*—Hakes—which possess large otoliths. In others, again, these muscles are long, and go well back from the eye ball, resting in a long narrow case parallel to the basi-sphenoid, and divided from the brain pan by a bony septum. The long recti muscles give a quickly mobile eye and are seen in the *Scombridæ*—Palymids—which have typically small otoliths, but that the quickness of sight, makes up for the dulness of hearing, or that more acute hearing follows because of the increased size of the otolith is a question not as yet



Pagellus centrodontos (After Retzius)
Sea Bream.

- | | |
|----------------|----------------------|
| A. Asteriscus. | s. Sacculus. |
| S. Sagitta. | ri. Ramulus Lagenae. |
| l. Lagna. | xs. Ramulus Sacculi. |

decidedly proven. The foregoing remarks have bearing on the Teleostean fishes, only, that is those possessing a bony skeleton. The large number of *Elasmobranchii*, i.e., fishes with a cartilaginous skeleton, do not possess solid otoliths. The place of the stone is taken by 'Otoconie' or ear dust. The otoconie, like the otolith, consists of crystals of carbonate of lime. The cartilaginous fishes require to hear as well as the bony framed ones; but why their ear membranes should contain dust instead of solid concretions is certainly so far

inexplicable, but the fact remains, and in this connexion it should be noted that in this respect the Sturgeon, *Acipenser sturio*, is an exception, possessing both otoconie and otoliths in its ear membrane.

The Carp family have their auditory organs in connexion with the air bladder, and so have several of the *Clupeidæ*, e.g., the Herring, *Culpea harengus*, and the Pilchard, *Clupea pilchardus*.* These have the Sagitta, as the largest otolith, as also have certain of the *Serranidæ*—the Perch family, the *Sparidæ*—the Sea Bream family, and *Gadidæ*—the Cod family.

The Sagitta of the Hake also has a connexion with the air bladder. All these families have the sagitta as the largest otolith. They, indeed, have a connexion between the air bladder, and the auditory organs, and with them there exists a slight variation in the arrangement of the organs to that adopted in the anatomy of the Carps, but it does not follow that the fact of the air bladder and auditory systems being connected, makes this arrangement essential to increase the size of the Asteriscus. Again, in the *Siluridæ*—*Arius gagoæ*, an inhabitant of the Indian Ocean—which have the same method of connecting the air bladder with the auditory organs as in the *Cyprinidæ*, to which the Tench, Fresh Water Bream, Roach, etc., belong, by means of moveably connected ossicles have the *lapellus*, as the largest otolith; their *asteriscus*, although well developed is relatively small. One characteristic in the shape of the Asteriscus which is apparently common to a great many families, is the little spike that projects from the middle of one side. It is so delicate as to be easily broken when dissecting this stone out of the membrane. There apparently exists a difference of opinion as to what the actual uses of the otoliths in the working life of the Teleostean fishes are, the older naturalists regarding them solely as the means of increasing sound vibrations, and so making the hearing of fishes more acute, while some of the more modern see in them only an organ to enable the fish to retain its equilibrium in the water, but there are still more recent naturalists, and possibly the more accurate and correct who credit the otoliths with helping the equilibrium as well as assisting the hearing. Taking the Cod as a sample, otoliths occupy the cavity under the posterior lobes of the skull; these are apparently connected, or rather have an auditory nerve which conveys the vibration of sound, through this differentiated channel to the nervous centre. In the Ray family, the otoliths occupy a cavity on the posterior lobes of the head; the cavities are filled with a mucous substance which surrounds the otoliths.

* The Cambridge Natural History, Vol. VII., page 389, quoting Bridge, Ridewood, E. H. Weber and Haddon.

which, unlike those of the Cod, are of a soft pasty constituency, and when dried have a chalky appearance. The phenomenon of sound is in this instance of a peculiar nature, since regarding the constituency of these otoliths in contradistinction to those of the Cod, it must be of a delicate nature, and consequently of an imperfect nature. Hearing may therefore be described as the vibration of solids and fluids propagated by means of waves through some intervening medium. The function of the hearing organs is to intercept and collect these undulations and convey the result to the brain, by which organ they are made manifest to the individual as sound sensations. This sensation of hearing may be defined as the conscious state resulting from the impinging upon a specially prepared part of the sentient surface of the body of aerial or fluid vibrations, caused by the molecular disturbances of bodies in a state of tremor or vibration. The essential part of an organ of hearing is obviously a nerve endowed with the peculiar property of receiving and transmitting sonorous undulations. In the auditory apparatus whenever and however sonorous undulations affect the nerve they must cause a sensation of sound and consequently it is by no means indispensable, as some contend, that any specially modified surface should be included in the auditory apparatus, since the auditory nerve, if merely in contact with any solid part—as the head—will be affected by the vibration in which it is continually participating.

In the round mouthed sucker fishes, the vestibule represented by the sac amongst invertebrates, gives off an annular passage which may be considered as a semicircular canal containing a few twigs of the auditory nerve. Amongst the higher Cyclostomes, *e.g.*, the Lamprey, two such canals exist, while the majority of other fish have three holding the same relation to each other as they do in man. In the higher order of fish, we have as already noted the addition of the labyrinth, consisting of three semicircular canals communicating with the vestibule, which, with the two ampullæ formed by the expansion of the semicircular canals, give rise to three cavities at each side of the base of the brain. In these are suspended the otoliths enclosed by gelatinous endolymph, and enveloped by a thin membrane traversed in every direction by minute branches of the auditory nerve forming an exquisite suspensory ligament. These otoliths are best studied in the skate, herring, sprat, mackerel, salmon or cod. They are calcareous concretions, purulent in the Cartilaginous fishes—ray and shark families—but hard and stony and of a porcellanous appearance in the osseous tribes.

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Still another new society is to be formed, viz.:—‘The Wild Bird Investigation Society.’

COMMON WILD BIRDS OF THE SCARBOROUGH DISTRICT.

W. GYNGELL.

(Continued from page 106).

*The Skylark (*Alauda arvensis* L.). Generally distributed as a common bird throughout the year its numbers are often greatly increased at migration time. Then, in autumn, as in small or large parties, calling or singing in modulated voice, it leisurely moves inland after its sea flight, it is one of the most noticeable of our migrants. Its full song may occasionally be heard at any time from January to December. On the Midsummer Night's excursion, an annual institution of the Scarborough Field Naturalists' Society, the Skylark is almost invariably the first bird to be heard, commencing to sing sometimes as early as 1-51 a.m. Then, its song may be continued at intervals during the whole length of a nineteen hours day. Sometimes it sings whilst perched in a hedge. The nest is usually placed on the ground in grass fields but may be found on the moors among the heather. Rarely more than four, often only three eggs are laid. These usually vary little from the type colouring, but I have seen a clutch almost pure white. A skylark's egg weighs .12 oz. The following note under date July 28th, 1900, appears in my bird note book. For the first time I have actually been deceived by a bird's apparently feigning being wounded. A skylark which I came across by the road side shuffled along the road for about twenty yards with every appearance of being lame, and I followed it up feeling sure that it was so. I carefully searched the roadside for nest or young but found none.

*The Swift (*Cypselus apus* L.). A very common, one might almost say abundant summer visitor; always late to appear, never but once having arrived in April and then on the last day of the month. One of the first summer birds to leave us, we have no note of its having remained after September 16th. Its favourite nesting sites are holes in tall buildings in town, though often it will nest well in under the thatch of a lowly country cottage. Its nest, though thin and light, is more substantial than is generally supposed, being formed of straws and grasses agglutinated by the bird's saliva. One nest I examined had in its composition many of the disc-shaped seeds of the wych elm, possibly gathered as they fell from the trees by the birds whilst in flight. The following most singular, perhaps unique experience in connection with swifts is here given just as it was written down at the time of its observation:—'On September 1st, 1897, I was near the top of Stepney Hill and saw two swifts flying near some ash trees growing by the road side. Presently one bird flew into one of the trees amongst the smaller side branches, apparently with the object of taking flies from the leaves. After repeating this action, to my great surprise, the bird clung to a pendant branchlet and there hung suspended vertically, its long wings drooping below the tail, at first in horse-shoe form and then afterwards closed together. The bird hung suspended at about twenty feet from the ground whilst I watched below for a quarter of an hour till darkness and the rain, which was then falling, sent me away. The bird remained motionless, quite indifferent to the rain and the breeze which caused it continuously to sway backwards and forwards. Whilst I waited the second bird approached and had a look at its mate two or three times and seemed to endeavour to settle on the same twig, but it did not do so and had disappeared when I left. That the birds were swifts I am absolutely certain. The incident was a great surprise to me, as I had never heard that the swift was in the habit of perching, even occasionally, much less settling down for the night in such a place and position, not

Naturalist.

perched, in the ordinary sense of the word; but vertically suspended like a great moth.'

The Nightjar (*Caprimulgus europæus* L.). A fairly common summer visitor. No early records of its appearance have been made, but eggs have been found by May 27th. It haunts uncultivated land from the level vale to the moorland heights, resting during the day among bracken, furze or heather and coming forth at night to 'churr' and hawk for insects. The 'churring' sound, like the noise of a distant threshing machine is, I feel sure, always produced when the bird is perched. Another sound made by the bird in flight is produced by striking the raised wings together. Both performances may sometimes be heard and the wing clappings seen in the day time. To stalk close up and listen to the bird's weird music on a calm summer's night is one of the most interesting experiences an ornithologist can have. When perching on tree branches the bird's body usually reposes longitudinally but I have seen it sit in the usual way of other birds. The nightjar's egg weighs '28 oz.

The Green Woodpecker (*Gecinus viridis* L.). Not really a common bird though regularly inhabiting our larger woods; often coming into the open to dig in sandy banks for sand-wasps and other insects. On a hot summer's day I have seen it at Castle Howard clinging to the stone obelisk, insect hunting in the crevices fifty feet above the road. I have heard its loud laughing or yapping 'hyi, hyi, hyi,' as early as February 4th and until October 15th. Its nest hole in *living*, more often than *dead* trees, is usually, though not always, a round hole bored by the bird itself, the eggs being laid upon the bare chips of wood which fall inside, whilst a heap of such white chips at the base of the tree often betrays the bird's nest.

The Great-Spotted Woodpecker (*Dendrocopus major* L.). Apparently rather more common than the last species and found in the same haunts. It also occasionally leaves the woods and may be seen at work on an old post in a fence or the plaster work of an old barn. Its nesting haunts too, are the same as those of the green species, but a smaller hole is made sometimes but eight feet, often as much as twenty-five feet above ground, holes in pines as well as deciduous trees being bored and occupied. The 'woodpecker tapping' produces a sound quite unlike that so often described by those who have never heard it. The bird also makes a rapid vibrating sound which is best imitated by holding the end of a walking stick loosely against a deal door and running it up and down the wood-work. This may be a sort of call. The alarm note sounds like 'chook.' Starlings are much indebted to woodpeckers for providing them with such nice ready-made nesting holes which they, the starlings, are not slow to usurp. An egg of this woodpecker weighs '16 oz.

The Kingfisher (*Alcedo ispida* L.). Scarcely to be called a common bird, though nesting annually on all the larger streams of the district and occasionally frequenting the sea-shore. I have found eggs in the nest by April 15th. The Kingfisher can and does excavate its own nest hole in a river sand-bank as is proved by the distinct marks of its beak about the entrance. The bird's egg weighs '14 oz.

* The Cuckoo (*Cuculus canorus* L.). This common summer visitor sometimes arrives here as early as April 16th, though eggs have not been found before May 31st. These, in this district, are most frequently placed in the nest of the meadow-pipit, whilst the hedge-sparrow, pied-wagtail and tree-pipit are quite commonly selected as incubators. The cuckoo regularly nests in town gardens or on our golf links. Both male and female 'sing' whilst flying as well as when perched on bush or wall. Its voice may be heard from 2-13 a.m. until 8-42 p.m. on a summer's day. On June 8th, 1895, I found a cuckoo's egg under most peculiar circumstances. I was walking through a thin plantation of birches on Seamer Moor when my attention was arrested by a heap of feathers on the ground. They were fairly closely packed, that is to say not scattered about. On

close examination I found that they were cuckoo feathers, both quill and contour, and *underneath them* there was a cuckoo's egg. There was nothing else; no bones, blood or evidence of a struggle, and no bird's nest near. But I imagine a sparrow-hawk was the author of the tragedy, the cuckoo having been caught immediately it had laid its egg and then plucked by the hawk which, possibly disturbed at its meal had then carried away the body of its victim. This may not be the true story, but I think it the most likely one. I still have both egg and feathers. The cuckoo's egg weighs '13 oz. Not all cuckoo superstitions are yet dead. In this twentieth century a local labourer told me that 'the cuckoo is a kind of hawk, but it does not call in the winter.'

The Barn Owl (*Strix flammea* L.). Of the three owls resident in our district this is the least common, probably owing to its coming abroad earlier in the evening and thus more often falling a victim to the game-keeper's gun. It is, sad to relate, a favourite household ornament when stuffed and mounted in a glass case. But the limited numbers in which it is still found in this district are not less than they were thirty years ago. One must not forget, too, that its northward range in Britain is restricted. A hollow tree, old pigeon cote or hole in a barn are its favourite local nesting haunts. As many as six eggs, each weighing '85 oz. are commonly laid; these may be deposited in fairly quick succession, though perhaps more frequently they are laid at such intervals of time that three pairs of young ones of most obviously different ages may all sit up and hiss at an intruder. I have often heard but have been disappointed in the, to me, somewhat feeble screech of this bird. A number of its cast-up pellets which I took from an old farm building show that the victims of this one pair of owls were small birds, chiefly sparrows, as well as mice and voles.

The Long-eared Owl (*Asio otus* L.). In its own particular haunts the densest and darkest of our spruce fir plantations, this is the commonest owl of our district. Here throughout the year it roosts throughout the day on the flat old nests of the wood-pigeon. It is most difficult to flush the bird. Sticks and stones may be thrown up and heavy kicks delivered ten feet below the roosting bird without apparent effect. Usually silent, it produces, particularly in the breeding season, some most uncanny sounds. Kee-avik—hoo, hoo, slowly uttered at intervals, faintly yet distinctly audible. Then perhaps a long pause and one may hear a low clapping sound produced by striking the wings together at each beat, *over* the back it has seemed to me. All these sounds may be heard as early in the year as January 9th, and by March 11th the four or five white eggs may be found on one of the old wood-pigeons' nests, from twelve feet to forty-five feet above ground. An egg weighs '82 oz. Sometimes an old nest of the magpie is used. Nothing is added to the former owner's work but a few of the owl's own downy feathers. When the young are hatched the nest may often be found to contain a dead mouse or vole, daylight rations obtained the previous night. The call of the young is particularly harsh and piercing and as unharmonious as the noise made by a slate-pencil scratched vertically along a slate. The young can also hiss. As all naturalists know, owls perch parrot-like with two claws forward and two to rear, but the baby long-eared species grasps objects (one's finger for example), with three claws forward and one backward. When the young are molested both parent birds sometimes fly round and 'snap' their beaks. In woods regularly inhabited by this species quantities of 'pellets' composed of the indigestible portions of former meals that the bird has cast up, may be found strewn about under the trees. These, on examination reveal the bird's tastes in meats. Some dozens that I have pulled to pieces have disclosed the remains of forty-four mice, thirty voles and two small birds.

(To be continued).

In Memoriam.

THOMAS GIBBS (1865-1919).

It will be with very keen regret that naturalists in Yorkshire and Derbyshire hear of the death of Thomas Gibbs at the comparatively early age of 54. For the past twenty years he has been one whose attendance at meetings of the Yorkshire Naturalists' Union has been welcomed with that warmth



The late T. Gibbs (left) with the late C. Crossland.

of feeling which fellow workers have for unostentatious ability and indefatigable service. He was one of the stalwarts of the annual Fungus Foray, and the photograph which we are able to reproduce shows him, as he was for some years, a right-hand helper of our late venerable chief mycologist, Charles Crossland. To many of us memory will add a companion picture. One of the earliest arrivals at the place of meeting, Gibbs would be out with his vasculum or basket assiduously

working the district in every nook and corner, to return at the close of the day with the reward of a full harvesting. Little escaped his observant eye while all his gleanings had their habitats duly recorded. In the sorting and examining which followed, his work was as careful as his judgment was trustworthy. It was only when the last specimen was cleared away that he allowed the tension to relax, and though naturally of a quiet and reserved manner he would warm even to enthusiasm in discussing some problem of Natural History or Philosophy.

Gibbs appears to have been always a naturalist. Educated at the Grammar School at Burton-on-Trent, he was only a schoolboy of eleven when the Natural History and Archaeological Society was formed in that town in 1876, and he became a junior member in the first year of its existence. The records of the Society show that he soon became a contributor, and like many youthful naturalists, he was first an entomologist, then from insects he turned to flowers and became a botanist. He was fortunate in the stimulating friendship of Mr. C. W. Tripp, Dr. P. B. Mason, Dr. Horace Brown, and the Rev. C. F. Thornehill.

Articled in 1881 he was admitted as a solicitor in 1887, yet all this time he was so devoted a naturalist that he worked the whole of the wide district of the Society's operations till he knew it intimately, as his contributions to Nature Notes, the Calendar of Nature, and the Lepidoptera of Burton bear witness.

After short periods of residence in South Wales, and at Haverhill, in Suffolk, he came into Yorkshire in 1890, joining a firm of solicitors in Sheffield. Very soon this corner of the county and the immediate neighbourhood of N. Derbyshire were as familiar to him as the fields and woods around Burton. He joined the Sheffield Naturalists' Club, and became one of its most useful and active members. In 1894 he returned to Burton and became the Secretary of his old Society, acting as Editor of Parts 2 and 3 of Vol. III. of its Transactions.

Before leaving Sheffield he turned his attention to the study of the Fungi, and when he returned in 1898 he was able to enter upon a thorough investigation of the Fungus Flora of the District. But a wider field was opened up to him for he became a member of the Y.N.U., and henceforth Mycology claimed him for her own. It was in Ecclesall Wood, near Sheffield, that he discovered a new Fungus, *Coprinus gibbsii*, named by Massee and Crossland and described by them in *The Naturalist*, 1902, page 1., 'probably the smallest Agaric known.'

After ten years in Sheffield he took up business at Derby, but resided at Wirksworth. He became a member of the

Derby Arch. and Nat. Hist. Society and started a new Society at Wirksworth. He compiled a first list of Derbyshire Agarics for the former Society's Journal, wrote the article on Fungi of the Sheffield District for the Handbook of the British Association which met there in 1910, and prepared for *The Naturalist* a report of the Rainfall of Wirksworth from records kept by his father at Bridge House. His last paper was a contribution to the Derbyshire Society's Journal, 'Pitty Hollow Wirksworth: a Botanical Study.'

Some years before, his studies in Brambles brought him into contact with the Rev. W. R. Linton whose *In Memoriam* he wrote for *The Naturalist*.

In the early days of the war he took an active part in forming the Home Guard at Wirksworth, but in 1916 he removed to Sussex, where he was a member of the Sussex Volunteer Corps. He died at Lindfield on February 8th.

He married in 1911, Miss H. E. Bowen, of Sheffield, who by his death is left a widow with a little daughter five years old.

Mr. Cheesman, one of that devoted band of Yorkshire Mycologists, a frequent companion of Crossland and Gibbs, writes of him:—

'By the death of Thomas Gibbs, Yorkshire Mycology has suffered another severe loss. For many years he was an active member of the Mycological Committee, present at every meeting, always prepared with some communication of value and ever ready to impart his knowledge to enquirers.

'His wide botanical knowledge made him a delightful and entertaining companion in the field.

'He became deeply interested in the study of Fungi, and whilst possessing a good all round knowledge of the group was soon led to specialise on the Coprophilous Fungi in which he was a noted authority, and was the means of adding considerably to our stock of knowledge of this section.

'He checked and verified the researches of Masee and Salmon (*Ann. Bot.*, 1901, 353-5) proving that the spores of Coprophilous Fungi did not germinate until they had passed through the intestines of some herbivorous mammal. During this work he raised *Coprinus gibbsii* Mass. and Crossl. which is probably the smallest agaric known. He also named and described *C. cordisporus* Gibbs n. sp. (*Nat.*, 1908, p. 100) and *C. cheesmani* Gibbs, n. sp., raised by cultures in *fimo Hippopotami* brought from the Victoria Falls, South Africa (*Linn. Soc. Jour.*, Feb., 1909).

'The Yorkshire records were augmented by him from time to time by numerous species of Sordaria and allied fungi. Since his removal from the county he has acted as referee for the Ascomycetes.'

The following is a list of Mr. Gibbs' published Natural History contributions:—

In *The Midland Naturalist*, 1885:—

Report of Entomological Section of the Burton-on-Trent Natural History and Archæological Society, 1884-5.

Insects new to the District of Burton-on-Trent.

In *The Transactions of the Burton-on-Trent Natural History and Archæological Society*:—

The Lepidoptera of Burton-on-Trent and neighbourhood, Vol. I., pp. 114-138, 1889.

The Larva of the Eel, Vol. III., Part 2, 1896.

The weather of 1894 (with Mr. Jas. Wells) Ibid p. 109.

The weather of 1895 (with Mr. Jas. Wells) Ibid, p. 170.

The weather of 1896 (with Mr. Jas. Wells) Vol. III., Part 3.

The Flora of Burton-on-Trent and neighbourhood compiled by Mr. Gibbs, Vol. III., Part 2, f. 177-190.

Vol. III., Part 3, f. 269-282.

Vol. IV., Part 1, f. 75-88.

Vol. IV., Part 2, f. 117-148.

The Climatological Distribution of British Plants,

Vol. IV., Part 1, f. 48-55.

In *The Naturalist*:—

Taraxacum found at Markland Grips, Derbyshire, 1900, p. 50.

Fungi in Yorkshire and Derbyshire, 1901, p. 128.

Fungi, near Wirksworth, 1901, p. 128.

Yorkshire Naturalists' Union at Masham, 1902, p. 15.

Fungi at Conisbro' and Doncaster, 1902, p. 123.

Coprophilous Fungi collected near Sheffield, 1902, p. 132.

Fungi collected at Y.N.U. meeting at Coxwold and Kilburn, 1902, p. 281.

Fungi of Bowes, Y.N.U. meeting, 1903, p. 373.

Fungi at Wharnccliffe, Y.N.U. meeting, 1903, p. 400.

Destructive Fungi in Wharnccliffe Woods, 1904, p. 15.

Kingfisher at Wirksworth, 1904, p. 31.

Navelwort in N. Derbyshire, 1904, p. 38.

Fungi in Potridings Wood, S. Yorks, 1904, p. 93.

Coprophilous Fungi at Helmsley, 1904, p. 113.

New Yorkshire Fungi, 1905, p. 139.

Schistostega osmundacea (Mohr), 1906, p. 301.

Fungi at Horton-in-Ribblesdale, 1907, p. 395.

W. R. Linton, In Memoriam, 1908, p. 51.

A New Coprinus (*C. cordisporus* Gibbs), 1908, p. 100.

Fungi: Correction in Horton List, 1908, p. 110.

Fungi at Osmotherley, Y.N.U., 1908, p. 409.

Bovistella paludosa on Osmotherley Moor, 1908, p. 457.

Fungi at Kirby Moorside, Y.N.U., 1910, p. 404.

The Relative Frequency of the Species Agaricus (Abstract), 1911, p. 28.

Rainfall records at Wirksworth, 1913, pp. 105-118.

Notes on Fungus Habitats, 1914, pp. 5 and 6.

Polyporus giganteus as a timber destroying Fungus, 1914, p. 129.

Fungi of Sheffield District, *Brit. Assoc. Handbook for Sheffield Meeting*, 1910, p. 433-442.

A First List of Derbyshire Agarics: *Journal of Derbyshire Arch. and Nat. Hist. Society*, Vols. XXX. and XXXI.

Pitty Hollow Wirksworth: a Botanical Study, *Journal of Derbyshire Arch. and Nat. Hist. Soc.*, 1918, p. 181-192.

E. S.

. EDWARD LAMPLOUGH.

We much regret to hear of the death at the age of 74 of Mr. Edward Lamplough, of Hull, which took place on the 26th March. Mr. Lamplough was the author of 'Hull and Yorkshire Frescoes,' and numerous volumes of poems, and the pages of *The Naturalist* have frequently been enriched by his sonnets. He took a keen interest in natural history, and for many years was associated with the Hull Scientific and Field Naturalists' Club, and in 1904-5, 5-6 occupied the presidential chair. He was keenly interested in microscopy and was especially skilful in the preparation of dissections of insects, etc.—T. S.



Edward Lamplough.

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FUNGI.

***Omphalia telmatiaea* in the Rotherham District.** Among the fungi I collected in the Rotherham district in 1918 was *Omphalia telmatiaea* a somewhat rare species which appears only to have been noted once before in Yorkshire, at Scarborough. For identification of this and other species I am indebted to Messrs. W. Bellerby and W. T. Elliott.—J. H. PAYNE, West Melton.

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Hull Museum Publications, Nos. 113, 114, 115, 116. Edited by T. Sheppard. A Brown & Sons, Hull. Now that the war is over, the Hull Museum has recommenced the issue of its well-known pamphlets. No. 113 is a Catalogue of the Imperial War Museum, with a list of the local war relics, and is issued at sixpence; the others are one penny each. No. 114 contains notes on 'The Evolution of Shipping as illustrated on Coins and Tokens,' 'Yorkshire and Lincolnshire Seventeenth Century Tokens,' 'More Bronze Age Relics from Scarborough,' and a report on a 'War Memorial Museum,' etc., all by the Curator; No. 115 contains 'Notes on Packing and Removing a Museum of Geology and Antiquities [Driffield] in War-time,' and 'Stuart Collections for Wilberforce House,' by the Curator, and 'The Woodlice of the Hull District,' by 2nd Lieut. T. Stainforth. No. 116 contains 'Money Scales and Weights,' by Mr. Sheppard, and 'List of Marine Mollusca of Iceland,' and 'Notes on Arctic-Alpine Mollusca,' by Hans Schlesch. These various papers have been reprinted from *The Naturalist*, *The Museums Journal*, *The Report of the British Association*, *The Transactions of the Yorkshire Numismatic Society*, and the Minutes of the Hull Corporation.

FIELD NOTES.

MOLLUSCA.

Unusual habitat for *Limnea truncatula* and *Physa fontinalis*.—On March 26th last, the head gardener to Selby Park, called my attention to some snails on the sides of the green slimy flower pots in one of the greenhouses. There I found a fairly large colony of the first of the above, with a few of the latter; all sizes from very small to almost the normal. On submitting a sample to Mr. J. W. Taylor, he writes as follows: 'In my opinion they are *L. truncatula* and *P. fontinalis* as you say. I have not heard of their living so numerously under the circumstances you describe, and they must have been kept very moist; of course, as you know, both these species are really land shells that are taking to a watery habitation, quite analogous to the seals, etc.'—J. F. MUSHAM, Selby.

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DIPTERA.

New Yorkshire Diptera.—When examining some diptera taken during the past summer at Farnley, Leeds, a tipulid was identified as *Pachyrrhina imperialis* Mg., but as this was not included in the published county lists and was very frequent in a garden during August, there appeared to be a possibility of error until it was confirmed by Mr. J. H. Ashworth. A single specimen of *Mycophaga fungorum* Deg. was also taken at the same place last July. This has been compared with Dr. Meade's collection now housed in the Zoological Museum at Leeds University, which contains, amongst others, a damaged specimen of this species taken at Thorp Arch, 20th August, 1879, which should stand as the earliest county record. Acknowledgment is made to Professor Garstang for facilities he has on several recent occasions granted to local workers at Diptera for comparing critical species with the named types in the valuable collection under his charge.—CHRIS. A. CHEETHAM.

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LEPIDOPTERA.

Aberrations in Lepidoptera.—I have in my collection an abnormal example of the Five-Spot Burnet Moth (*Zygaena lonicerae*) possessing four antennae. It was bred from a cocoon which I took on the coast at Flamborough Head. I have also a preserved larva of the Cinnabar Moth (*Euchelia jacobaeae*) in which two of the black bands in the centre of the body cross one another. This is from Spurn.—CHAS. COULDWELL, Hull.

GEOLOGY.

Milk Tooth of Mammoth (*Elephas primigenius*) from Aldborough.—I have just obtained a somewhat interesting Mammoth tooth which was found recently on the Holderness Coast at Aldborough, by Miss A. Colley, of Hull. It is a very small example and is apparently one of the milk teeth which in the young of the elephant family, occupy the position of the premolars, but are afterwards crowded out and not replaced. That the tooth referred to is a milk tooth may be judged from the root formation (like an inverted canine tooth), and from the fact that an undeveloped anterior molar would have been three times the size and have a compound root.—CHAS. F. PROCTER, Hull.

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CORRESPONDENCE.

FORMER STATUS OF THE STARLING.

THAT the Starling is now much more evenly distributed over the whole of England than was the case fifty or sixty years ago, is a fact too well-known to be disputed. A century ago it was extremely rare as a breeding species in Northumberland, and till comparatively recent years was only a winter visitor to Cumberland, the greater part of Wales and Cornwall. It is therefore not surprising that in South Lancashire it was as Mr. Massey states, still scarce till about 1890. At this date it was, however, plentiful in the Trent basin, and in the Derwent Valley right up to the moorlands. Evidently the high ground to the northward acted as a bar to its progress, and probably the wave of immigration came from the Cheshire side.

I have not mentioned the spread of the Starling in Scotland, as the subject has already been fully treated by Harvie-Browne (*Ann. Scot. Nat. Hist.*, 1895, and *Vert. Fauna of Tay*, p. 138) to which papers Mr. Butterfield may be referred.

Some of Mr. Butterfield's evidence is quite beside the mark. There is no proof that the instance of the nesting of the Starling recorded by T. W. Barlow (*Zool.*, 1845, p. 1023) took place in Cheshire. It is merely given on the authority of an unknown friend who may have lived anywhere. The presence of large flocks in South Derbyshire in 1844 has obviously no bearing on the status of the species in Lancashire. Neville Wood was also resident in the Dove Valley and had no personal acquaintance with Lancashire.

The question can only be studied satisfactorily when some regard is paid to natural conditions, such as the presence of mountain ranges or large tracts of treeless country devoid of breeding sites, which act as barriers to the progress of an increasing species for a time, even in the case of a strong winged species like the Starling. Mr. Butterfield will find the solution of the English problem, speaking generally, lies in the study of our mountain systems: the Pennine chain, the Derbyshire Peak, the Cambrian and Devonian groups acting as breakwaters which checked, but did not stop, the oncoming tide.—F. C. R. JOURDAIN, Appleton Rectory, near Abingdon, Berks.

—: o :—

Northern records occur in 'Gleanings from my Note-books, V.,' by Dr. J. W. H. Harrison, and 'British Neuroptera in 1917 and 1918,' by Mr. W. J. Lucas, in *The Entomologist* for March.

NEWS FROM THE MAGAZINES, etc.

Mr. H. H. Corbett, of Doncaster, has been elected a Fellow of the Linnean Society.

Mr. J. H. Gurney's 25th annual report on the ornithology of Norfolk appears in *British Birds* for April.

Still another new Society is suggested, "The Geographical Association, the headquarters of which are at Aberystwith.

From January 1st Dr. Alfred Harker has been appointed Reader in Petrology at the University of Cambridge.

Mr. J. R. le B. Tomlin and Prof. T. Hudson Beare have retired from the editorial staff of *The Entomologist's Record*.

A Memoir and portrait of the late F. Du Cane Godman, F.R.S., appear in *The Entomologist's Monthly Magazine* for April.

Mr. J. J. Lister, F.R.S., writes 'On some north-Country [Lake District] species and forms of Lepidoptera' in *The Entomologist* for April.

The Lancashire and Cheshire Naturalist for February, issued April (9th), is entirely devoted to a section of Mr. H. J. Weldon's Fungus Flora of Lancashire.

The Museums Journal for April contains a paper on 'Arrangement of an Ethnographical Collection' by Ben H. Mullen, and 'The Application of Art to Industry, and its relation to Museums,' by S. E. Harrison.

We have received the Annual Report of the *Scottish Marine Biological Association*, which contains a list of additions, a list of the late Dr. J. M'Rury's Collection of Birds' Eggs, as well as a report on the Society's work during the year.

As a supplement to *The Journal of the Board of Agriculture* for March, is a valuable pamphlet on 'The Cultivation, Composition and Diseases of the Potato,' which contains 116 pages, and many illustrations (some coloured), and is sold at the low price of sixpence.

A lengthy abstract of a paper on 'The Petrography of a Sedimentary Rock, with special reference to the Carboniferous System,' read to the Midland Institute of Mining and Mechanical Engineers, by Dr. Alfred [Albert] Gilligan, appears in *The Quarry* for March.

A writer in *The Entomologist's Record* for February states he started from London to visit Stainton's 'Hilly Field,' near Mickleham, Surrey, in June, 1882, but did not arrive at his destination till July 28th, 1919! The trains in the south must be worse than we thought!

Among the contents of *The Entomologist's Monthly Magazine* for March, we notice a Note on the British representatives of the Genus *Macropsis* Lewis, Notes on Sawflies, and *Allantus perkinsi* n. sp., a new British sawfly. There is also a record of *Phryganea obsoleta*, a new record for Yorkshire.

We have received from Messrs. Wheldon and Co., of 38 Great Queen Street, Kingsway, London, their catalogue No. 86, which is entirely devoted to Entomological works, and contains particulars of over 1,000 items, carefully classified. The catalogue itself is distinctly valuable from a scientific point of view.

At a recent meeting of the Entomological Society of London, Mr. E. E. Green exhibited specimens of a rare Coccid (*Kermes quercus*) taken on the stem of a single oak at Selby. They were found to be associated with dense groups of adventitious buds on the stems of the tree, and were extraordinarily like the buds themselves.

Vol. LXII., part 3 of the *Memoirs and Proceedings of the Manchester Literary and Philosophical Society* contains Regional Distribution of the Native Flora of Teneriffe, by J. H. Salter; The Association of Facetted Pebbles with Glacial Deposits, by J. W. Jackson; Radio-Activity and the Coloration of Minerals, by E. Newbury and H. Lupton, and The Superficial Geology of Manchester, by Margaret C. March.

3 MAY. 1919

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May 1st, 1919

THE NATURALIST.

A MONTHLY ILLUSTRATED JOURNAL OF
NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

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THE MUSEUMS, HULL;
AND

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WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

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RILEY FORTUNE, F.Z.S.



Contents :—

	PAGE
Notes and Comments (illustrated):—Tidal Lands; Royal Commissions; Blakeney Point; Medical Contributions, and the Study of Evolution; A Discussion; Summary of Contents; The British Museum; Cherianths, ii., 1919; Moir Jaw; Practical Handbook of British Birds; Local Societies and Adult Education; Exeunt Sea-Eagle; Dates of Publication; A New Songster: 'The Gardener and the Robin'; Fieldfares; Food of Wild Birds; A Verdict; A Tell-tale Diagram...	185-194
Songs of the Birds—Prof. W. Gaystang, M.A., D.Sc....	195-198
The Witchery of Gilbert White—Rev. E. A. Woodruffe-Peacock, F.L.S., F.G.S., F.E.S.	199-205
Yorkshire Naturalists at Coxwold (illustrated)—W.E.L.W.	206-210
The Nightmare of Names in the Bed of Roses—F. Arnold Lees, M.R.C.S.	211-213
Field Note:—Spring-gun in Oak Tree (illustrated)	214
Correspondence: Former Status of the Starling	215
Proceedings of Provincial Scientific Societies	214, 215
Northern News	205, 213
News from the Magazines, etc.	216
Illustrations	189, 193, 194, 206, 214

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Mycological Meeting at Helmsley, in September.

Yorkshire Geological Society :—

- Washburn Valley, July 12th.
Penistone District, July 26th.
Settle, August 23rd-25th.

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Museums Association, at Oxford, July 8th-10th.

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Discovery. (Liverpool, 4to). 1891.
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Geological Magazine, 1890-1-2-4.
Huddersfield Arch. and Topog. Society. 1st Report, 1865-1866. (38 pp.).
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NOTES AND COMMENTS.

TIDAL LANDS.*

Until recent years the question of tidal lands, their formation, reclamation and protection, was one for the engineers; occasionally they sought the aid of the geologist. Modern researches however, particularly on the part of Prof. Oliver, at Blakeney Point, Norfolk, have demonstrated the advisability of courting the aid of the botanist in connection with tidal land problems. It is therefore appropriate that Mr. Carey and Prof. Oliver should jointly produce a volume, bringing together for the first time the views of a practical engineer and an expert botanist.

ROYAL COMMISSIONS.

Expensive Royal Commissions have sat dealing with the protection of the most recent additions to our islands, and vast volumes exist containing acres of expert evidence on the question of the protection and utilization of new lands, but had one the time and ability to digest this great mass of matter we doubt whether the result would be half as beneficial as a perusal of 'Tidal Lands,' where the whole problem seems to be succinctly summarised and discussed on sound and up-to-date scientific lines. Whether dealing with tidal rivers, sand-dunes, shingle-beaches, reclamation, salt marshes, plant winning of tidal lands, or the numerous other problems, the chapters are exceptionally complete, and made further valuable by the addition of numerous plans and reproductions from photographs.

BLAKENEY POINT.

It may be taken that the valuable work at Blakeney Point—now familiar to the scientific world—forms the basis of the volume, but many other areas, at home and abroad, are described and compared. In this country, Essex, Sussex, Torquay Harbour, Rhyl Dunes, Norfolk and numerous other areas are dealt with. Yorkshire is neglected; and we would suggest to Yorkshire naturalists the advisability of thoroughly investigating Spurn Point—one of the best places in the country for the purpose—on the lines of 'Tidal Lands.'

MEDICAL CONTRIBUTIONS,†

While considering the subject of the Croonian Lectures which Dr. Adami was invited to deliver, he tells us that 'a chance discussion with a leading British biologist [Sir E. Ray Lankester] convinced me that the time was ripe to

* 'Tidal Lands: A Study of Shore Problems,' by A. E. Carey and F. W. Oliver. Blackie and Sons, 284 pp., 12s. 6d. net.

† 'Medical Contributions to the Study of Evolution,' by J. G. Adami. Duckworth and Co., 372 pp., 18s. net.

bring together and sum up the conclusions regarding Adaptation which as a student of pathology I had reached gradually in the years preceding the war. I judged from the discussion above referred to that the earlier work was not known to biologists in general. Varied as is his reading and brilliant his memory, this distinguished biologist was evidently wholly ignorant concerning it. It seemed also that it would be serviceable to present the conclusions reached, not so much from the point of view of their medical bearing as from that of their biological significance, in order that both morphologist and physician might observe the direction in which medical research is surely leading us with reference to matters that form the basis of general biology. Hence the Croonian Lectures upon Adaptation and Disease, delivered in June, 1917, which forms the first part of this volume.'

AND THE STUDY OF EVOLUTION.

Dr. Adami goes on to say that 'The survival of the fittest does not depend upon chance variation. A given environment leads to variation in a particular direction, provided that the change in surroundings is not so great as to be beyond the adaptive powers of the organism. Where "chance" enters is in the nature of the new environment to which the individual and the race, may be exposed. To the extent that the individual is unable to control his surroundings, to that extent is the race exposed to chance. It does not appear to have been sufficiently realized hitherto that here essentially it is that chance is operative. Conjugations and amphimixis, it is true, are a cause of individual variation, but from the point of view of the race are distinctly conservative processes, tending to maintain the mean.'

A DISCUSSION.

We have long wanted a book dealing with the medical side of the question of evolution and certainly Dr. Adami covers an enormous ground, apparently thoroughly, and his remarks on several of the questions are remarkably full and clear. It seems a pity, however, that Sir Ray Lankester and his views seem to take the part of a King Charles' head with Dr. Adami, and we certainly think the dignity of the volume is impaired by the inclusion of the rather personal correspondence reprinted from the *British Medical Journal*, in connexion with which we must admit our sympathies are with Sir Ray. Still, if that discussion resulted in the present work we must not grumble.

SUMMARY OF CONTENTS.

The first part of the book deals with Adaptation and Disease (seven chapters) being the Croonian Lectures delivered to the Royal College of Physicians in 1917. Part 2 (nine

chapters) discusses Heredity and Adaptation, and Part 3 (six chapters) is 'On Growth and Overgrowth.' The great variety of subjects dealt with can be gathered from the titles of four chapters, selected almost at random :—'The Physics—Chemical Basis of Immunity and of Evolution.' 'The Biophoric Concept'; 'On the variability of the Bacteria and the Development of Races'; 'A Lecture on Life'; and 'Unipotentiality, Pluripotentiality, and Tolipotentiality of Cells: a Note upon the Classification of Tumours.'

THE BRITISH MUSEUM.

Many letters have reached us on the matters referred to in our April number. We are not able to print them all, but the following seems to embody nearly all the points raised by the various writers :—A correspondent writes :—'Your articles on the recent appointments at the Natural History Museum have caused wide interest. But I think perhaps you are a little severe on the Three Principal Trustees. The present Lord Chancellor had barely a few days in office and could not know anything about the staff or the working of the Museum, and must, therefore, be left out of account; the Speaker wrote an unfortunate letter to *The Times* over the micro-lepidoptera, and does not seem to have the necessary knowledge to judge; the Archbishop, who, if I remember rightly, was a nominee of Queen Victoria's, had time to acquaint himself with the existing facts, had he had the time to attend to them. In any case those three men are too busy for the work. There are many other Trustees who may have had a large influence on the appointing Three, and the experience of past years may have had a great influence on their opinion.'

'The initial success of insisting on a scientific rather than a lay chief has been of considerable importance, as it has probably saved several other Institutions from a like fate. But the selection of the scientific man is fully open to public criticism. Those who know the Museum by the public activities of the men therein could not hesitate to nominate the more prominent for a moment. Speaking of one department, the Geological, the officers of which are constantly giving lectures or addresses on their charges, one wonders why it should be penalised throughout by the selection made. All the officers are eminent in their subjects, yet they are all condemned by the appointment of a junior man from ever rising to the positions which should undoubtedly have been theirs and were open to them when they entered the service of the Trustees. Officers in the other Departments of the Museum are no doubt in the same unfortunate position. Thus it is clear that an injustice has been

done, and such injustice cannot work for harmony or the general efficiency of the establishment. Had the new Director been a man of outstanding eminence something might have been said. The lamentable weakness of past years has been only too apparent, while during the same period lay control has been pre-eminent ; and it will be of interest to see whether the new director, will be a Director or a mere figure-head.'

CHEIRANTHS . II. . 1919.

Hand-flowers ! Bloom again—*Giroflées* prank !
 May's here, and Peace, and the storks, again nest
 On the flat roofs of Flanders, and rank after rank
 The pavid faced *poilus* make track for their rest ;
 Remembrance may fade like the wreath so well won,
 The comrade's mute spin-fall beside one was tragic,
 But no more a fate to be dwelt on being done,
 Than the flush of a dawn or the set of a sun—
 The venue quick changed to the placable magic
 Of just an idea, yet imbruing all being :
 Calm certitude inly, and hap now for seeing
 One's kindred, and Home with its beehives a-row,
 And the queer quiet ways that a flower can blow !

The Dead in our hearts are a lifetime enshrined
 Till we who feel, pass too, and join spirit hands ;
 But the spared are twice free ! body, soul, unconfined,
 And they home as the dove to its cote in all lands,
 To greet again daily their dulcior gaily,
 Fair father, rare mother, one 'chum' or another,
 Content like the bees to drink joy in, and thrive,
 Unwordingly conscious they're Blest and alive.
 So, Wallflowers ! dight ye, in lake—orange—red ;
 Beflag and encrimson your earths as of yore ;
 Perfuming the pane of the sanctified bed :
 Your message and Symbol keep sweet evermore.

F. ARNOLD LEES.

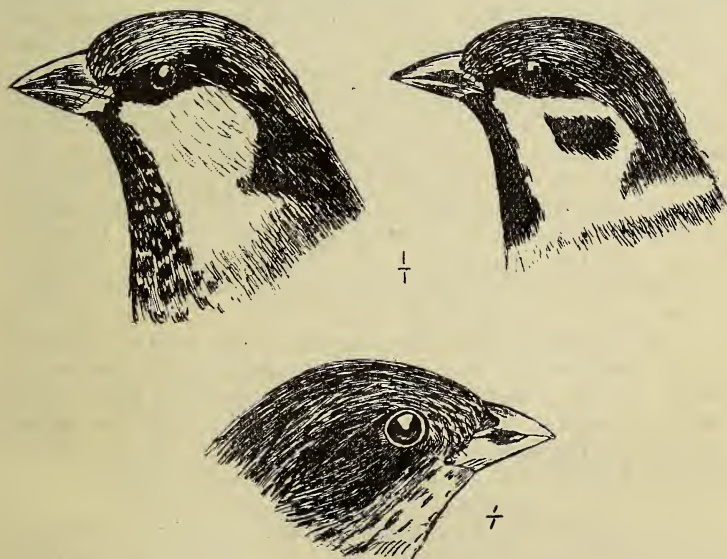
MOIR JAW.

In 1855 a human jaw-bone was 'shot out of a cart containing coprolite,' from a deposit near Ipswich. Palæontologists then considered the jaw to lack primitive characteristics, in addition to which it contained eight per cent. of organic matter. The jaw was figured in *The Anthropological Review* in 1867, and then apparently went to America. In his presumed anxiety to discover anything ancient from the Ipswich area, Mr. J. R. Moir is writing to the popular press endeavouring to trace the jaw. Judging from the illustration which he reproduces, and the admittedly doubtful pedigree it possesses,

it is difficult to understand what good can accrue even if the present whereabouts of the jaw is known. Of course it is an advertisement for Mr. Moir, though one would have thought he had had enough publicity lately ! It is a relief to find that up to the present, he has not claimed it to be the jaw of a mammoth !

PRACTICAL HANDBOOK OF BRITISH BIRDS.

Part 2 of the *Practical Handbook of British Birds*, by H. F. Witherby, issued on April 20th (pp. 65-128, 4/- net) is equal to part 1, in every way. It has coloured plates showing heads of the various Buntings, the Common Cross-bill, and there is a plate in black and white of the Redpoles. We are not



sure whether some of the illustrations in the text are quite as successful as they might be. To afford an opportunity of judging, we are reproducing three of these, by permission of the publishers, and leave our ornithological readers to guess what they are.

LOCAL SOCIETIES AND ADULT EDUCATION.

The 'Report of the Corresponding Societies and of the Conference of Delegates,' held in London in July last has been published (45 pages, 1/-), and contains Dr. F. A. Bather's presidential address entitled 'The Contribution of Local Societies to Adult Education'; an address on 'Afforestation, Its Practice and Science,' by Mr. Martin C. Duchesne; a note

by Mr. B. B. Woodward on 'A Typomaph of the British Islands'; a list of the Corresponding Societies affiliated with the British Association, and the usual Catalogue of the more important papers, especially those referring to local scientific investigations, published by the corresponding Societies during the previous year. Dr. Bather's address is well worthy of careful consideration by the members of our local Societies, though the discussion, which is printed in extenso, is not very conclusive.

EXEUNT SEA-EAGLE.

A brief obituary notice appears in the current number of *Bird Notes and News* of the last of the white-tailed or sea-eagles of the Shetlands. This is also believed to be the last of the British race of these noble birds and has only survived to the present day through the protection afforded by the watchers of the Royal Society for the Protection of Birds. She has outlived her mate for eight years and grown quite white; but for several years after the disappearance of the male bird—probably shot in some unprotected area—she haunted the old nest and watched and waited. The Society unfortunately was too late to preserve the British 'ernes' and man's hand had been too long against them. Down to 1836 it was the custom of the 'Commissioners of Supply' in an outburst of economic zeal not unparalleled in later days, to give 3/6 for every eagle killed. The collector did his best to help in the destruction, one writer who visited Shetland in 1837, mentioning that he had obtained eight specimens. Since then the resident birds and also wandering individuals have been eagerly shot 'for preservation'; with the result that the British Erne has now to be added to the list of exterminated birds lost for ever to this country's fauna.

DATES OF PUBLICATION.

The Lancashire and Cheshire Naturalist, dated December, 1918, reached us on March 3rd, and was posted from the publishing office on March 2nd. There is nothing on the cover to show that there is an error of about three months in the date of the publication. Inside, on page 248, is a record of a new Carboniferous Nautiloid (*Coelonautilus trapezoidalis*) which is quite possibly the first record of this new species. From a bibliographical point of view, therefore, this record was apparently made in 1918. However, as this December number contains, on page 252, a record of a meeting of the Liverpool Geological Society, held on February 11th, 1919, it is clear that this new species should not be included in 1918 lists, but in 1919. We certainly think that as new records are of considerable importance, care should be exercised by editors in seeing that their publications are correctly dated.

A NEW SONGSTER.*

Prof. F. W. Moorman, who has done so much to preserve the dialect and poetry of our county, has recently produced a volume of his own poems, valuable alike as a record of our dialect, as of Yorkshire life and character. In an admirable Preface the author tells us that 'the time may be not far distant when England will again become what it was in Elizabethan days—a nest of singing birds, where the minor poets will be able to take their share in the chorus of song, leaving the chief parts in the oratorio to the Shakespeares and Spensers of to-morrow.' Professor Moorman gives twenty-five poems, and personally we should like to quote them all, but no doubt his publishers and our printers would both object. Anyway we take the liberty of quoting from two of the poems :—

' THE GARDENER AND THE ROBIN.

' Why ! Bobbie, so thou's coom agean !
 I'm fain to see thee here ;
 It's lang sin I've set een on thee,
 It's ommost hauf a yeer.
 What's that thou says ? Thou's taen a wife
 An' raised a family.
 It seems thou's gien 'em all the slip
 Now back-end's drawin' nigh.

I mun forgi'e thee ; we're owd friends,
 An' fratchin's not for us ;
 Blackbirds an' spinks I can't abide,
 At doves an' crows I cuss.
 But thou'll noan steal my strawberries,
 Or nip my buds o' plum ;
 Most feather-fowl I drive away,
 But thou can awlus coom.

Ay, that's thy place, at top o' t' clod,
 Thy heead cocked o' one side,
 Lookin' as far-learnt as a judge.
 Is that a worrm thou's spied ?
 By t' Megs ! he's well-nigh six inch lang,
 An' reed as t' gate i' t' park ;
 If thou don't mesh him up a bit,
 He'll gie thee belly-wark.

My missus awlus lets me know
 I'm noan so despart thin ;

* ' Songs of the Ridings,' by F. W. Moorman. Elkin Matthews, 71 pp., 2s.

If I ate sausages as thou
 Eats worms, I'd brust my skin !
 Howd on ! leave soom for t' mowdiwarps
 That scrats down under t' grund ;
 Of worms, an' mawks, an' bummel-clocks
 Thou's etten hauf a pund.

* * * * *

FIELDFARES.

Fieldfares, bonny fieldfares, feedin' 'mang the bent,
 Wheer the sun is shinin' through yon cloud's wide rent,
 Welcom back to t' moorlands,
 Frae Norway's fells an' shorelands,
 Welcom back to Whardill, now October's ommost
 spent.

Noisy, chackin' fieldfares, weel I ken your cry,
 When i' flocks you're sweepin' ower the hills sae high :
 Oft on trees you gethers,
 Preenin' out your feathers,
 An' I'm fain to see your coats as blue as t' summer sky.

Curlews, larks an' tewits, all have gone frae t' moors,
 Frost has nipped i' t' garden all my bonny floors ;
 Roses, lilies, pansies,
 Stocks an' yallow tansies
 Fade away, an' soon the leaves 'll clutter doon i'
 shoors.

* * * * *

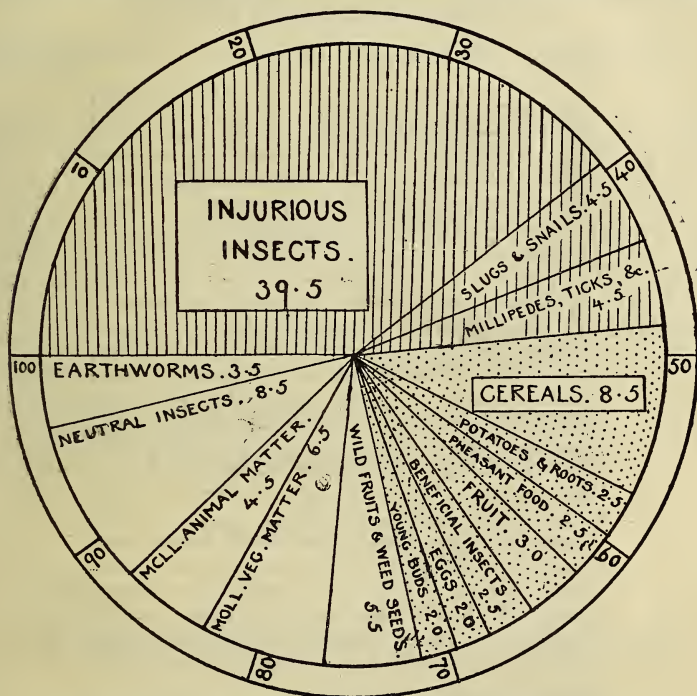
Storm-cock sings at new-yeer, swingin' on yon esh,
 Sings his loudest song when t' winds do beat an' lesh ;
 Robins, throstles follow,
 An' when cooms the swallow,
 All the birds 'll chirm to see our woodlands green an'
 nesh.

Fieldfares, bonny fieldfares, I'll be gone 'fore you ;
 I'm sae weak an' dowly, hands are thin an' blue.
 Pain is growin' stranger,
 As the neets get langer.
 Will you miss my face at whiles, when t' owd yeer's
 changed to t' new ?

FOOD OF WILD BIRDS.

In *The Journal of the Board of Agriculture* for March,
 Dr. W. E. Collinge gives the results of 'Some further Investiga-
 tions on the Food of Wild Birds,' in which he deals with

the Jackdaw, Starling, Chaffinch, Yellow Bunting, Great Tit, Blue Tit, Song Thrush and Fieldfare. He gives a very graphic diagram showing the nature of the food of each of the particular species dealt with, based upon the examination of the crops of a large number of individuals. These



Diagrammatic Representation of the Percentages of Food of the Jackdaw.

show at a glance the relative good and harm done by the particular bird examined. One of them is reproduced herewith.

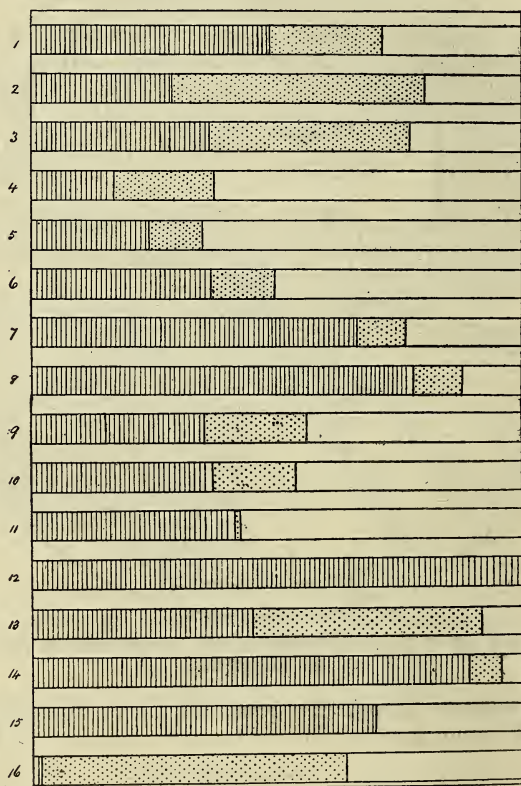
A VERDICT.

Dr. Collinge summarises the results of his researches by reporting that 'after examining the stomach contents of 798 adults and 166 nestlings, embracing eight species of wild birds, the opinion has been formed that (1) the Jackdaw, Yellow Bunting, Great Tit, Blue Tit, Song Thrush and Fieldfare are distinctly beneficial; (2) The Great Tit, Blue Tit, and Fieldfare are beneficial to such an extent that their protection is advisable; (3) In spite of the injuries it commits it would be unwise to recommend any repressive measures for the Chaffinch; (4) The Starling has been allowed unduly to

increase. At the present time it is far too numerous, and the injuries it commits are far greater than the benefits it confers. Temporary repressive measures would, no doubt, help to restore a more normal population of this bird, with considerable benefit to both the farmer and the fruit-grower.

A TELL-TALE DIAGRAM.

Dr. Collinge concludes by giving the accompanying



- | | | | |
|---------------|--------------------|-----------------------|-------------------|
| 1. Jackdaw. | 5. Yellow Bunting. | 9. Missel Thrush. | 13. Sparrow Hawk. |
| 2. Rook. | 6. Skylark. | 10. Song Thrush. | 14. Kestrel. |
| 3. Starling. | 7. Great Tit. | 11. Field-Fare. | 15. Lapwing. |
| 4. Chaffinch. | 8. Blue Tit. | 12. Green Woodpecker. | 16. Wood Pigeon. |

diagram which illustrates in a remarkable way the comparative benefits, injuries, etc., of the species named. Benefits are marked by the portions shaded by longitudinal lines, injuries by stippling, and the blank portions represent the percentages of food of a neutral nature. For permission to reproduce this and the preceding diagram we are indebted to the Board of Agriculture and Fisheries.

SONGS OF THE BIRDS.

WALTER GARSTANG, M.A., D.Sc.,
Professor of Zoology in the University of Leeds.

THESE songs represent the first-fruits of an attempt to reproduce in suggestive verse the distinctive characters of the songs of our English birds. The first four are reprinted, with a few corrections, from the *Yorkshire Weekly Post* of April 19th, May 3rd, May 10th and May 24th, 1919 ; the fifth is new ; the sixth is reprinted, with a few corrections, from *The Times* of May 8th. To the courtesy of the editors and publishers of these journals the author is indebted for the opportunity of bringing these songs together before the close of the season.

Others are in preparation and will appear, it is hoped, in succeeding numbers of *The Naturalist* from time to time.

I.—The Song of the Chaffinch.

Hark to the Chaffinch on yonder tall spray
 Buoyantly singing his roundelay gay :
 Some plain and some trill'd notes, a final bravado—
 Téll, tell, tell ; Chéry-erry-erry ; Tissychoo-éo !

So through the heyday of love and good cheer !
 But, when alone, at the start of the year,
 In vain he attempts that last flourish so merry ;
 All he can sing is : Tell, téll, tell ; Cherry-erry !

Meanwhile the sun's ever widening sweep
 Stirs bright-locked Pan from his long winter sleep ;
 Young folk exchange love-rhymes, birds brighten each
 feather—
 Pan's and St. Valentine's feasts run together.—

Thus before Valentine's day in the Spring
 Pan tunes the pipes of each bird on the wing,
 And Pinky rings out his full carol with glee : Ho !
 Téll, tell, tell ; Chéry-erry-erry ; Weécho, Sis-cheo !

II.—The Song of the Greenfinch.

Twittering sweetly in the trees,
 Dainty greetings sending ;
 Throwing love-notes on the breeze
 Musically blending ;—
 Why, then, flaunt a raucous wheeze,
 Greenfinch, for your ending?

There you ring your tinkling call :
Did-it-it-it-itty !
Chow, Chow, Chow, Chow, richly fall—
 Joy-notes of your ditty !
 JEE—R !—What harsh, uncanny drawl !
 Is it not a pity?

Your pretty twitter you employ
 As well to keep up, on the wing,
 Communications aëry ;
 Those loud full-throated notes of joy
 You share with other birds who sing,
 Including the canary.
 Alas ! that, like a naughty boy,
 You've learned the taunting jeer to fling,
 Nor find your rivals chary !

III.—The Song of the Wren.

See, Sweet, see, see, see, see,
 The sun showers kisses through the tree !
 So must I trill
 My music shrill ;
 See, Sweet, see, see, see, see.

See, Sweet, Sweet, Sweet, see, see,
 Such joys attend simplicity !
 With bliss I thrill
 And loudly trill ;
 I would all space with music fill !
 See, Sweet, see, see, see, see.

So sweetly falls in winter sunshine's kiss !
 So short the joys endure of springtide bliss !
 Then short and sweet the song shall be for me :
 See, Sis, Sis, Sweet, Sweet—trill !—see, see, see, see !

IV.—The Song of the Hedge Sparrow.

Hail, thou, homely warbler of the hedge and country side,
 Equally contented where the rich or poor abide,
 Setting example to all on the wing,
 Brightening Winter with carols of Spring !
 Unpretentious though your lay, and far from rich your voice,
 Wée-so, Sissy-wée-so, Sissy-wée-so, Sissy-wée !
 Yet a real melody is heard when you rejoice—
 Wée-so, Sissy-wée-so, Sissy-wée-so, Sissy-wée !
 Built by repeating the shortest of staves,
 Sée, Sissy-wée, Sissy-wée, Sissy-wée ;
 Running in rapidly following waves,
 Sée, Sissy-wée, Sissy-wée, Do you sée ?
 Modesty like yours, shy Dunnock, gains but little praise—
 Least of all, or not at all, for slight and simple lays ;
 Yet, if I gain for you one or two friends,
 That will perhaps make the best of amends !
Wée-so, Sissy-wée-so, Sissy-wée-so, Sissy-wée ;
Sée, Sissy-wée, Sissy-wée, Sissy-wée !

V.—The Chorus of the Willow-Warblers.

Among the birds which come and sing
 To crown the joys of England's Spring
 Some excel in warbles louder,
 Others in their plumage prouder ;
 Yet not a songster can outvie
 The little Willow Warbler shy
 In the sweetness of his carol
 Or his neatness of apparel.
 Beneath these trees hark, from their throats,
 The rippling streams of silvery notes !—
 Each a tender scale descending,
 All in whispers softly ending.
 How tremulously sweet they fall,
 And, ever simple, never pall ;
 SIP, SIP, SIP, SEE, Tee-tew, Wee-tew ;
 Witty, witty, wee, *wee, weetew !*
 But, ere one bird completes his strain,
 Another starts the same refrain :
 Thus a rustic chorus rises,
 Full of nicely tuned surprises.
 Philosophers say birds lack wits ;
 Musicians, sense of harmony.
 Fain would I ask them how it fits
 That willow warblers, lacking wits,
 Can blend their notes so charmingly !

VI.—The Wing-Song of the Tree-Pipit.

Have you, during Maytime's splendour,
 Seen from trees a Pipit slender
 Silently his perch surrender
 And fly aloft, as though above the lark at heaven's gate to
 soar ?

But, upon a small height gaining,
 Turn around and, downward planing,
 Pæans of exultation raining,
 His soul in throbbing ecstasies of love and glorious life out-
 pour ?

See, above the oaks one rises !
 Flight so sheer has no disguises !
 'Tis his silence that surprises
 When straight he mounts that unseen ladder in the sky above
 his tree.

Now he sinks, and peals his solo
 Loudly, then *diminuendo* :
 Chip, chip, chip, chip ; CHOO, CHOO, CHOO, CHOO ;
 PESEE, PESEE, Pesée, Pesée, pesée, pesée, *pesée, pesée* !

Wait now, watch, and keep quite still !
 Listen to the voiceless trill
 Coming from that slender bill
 And charged with joy unspeakable of his devotion !

The thrill of rapture waxes, wanes and dies
 As he alights again upon his tree ;
 And then, if all goes well, there will arise
 See !—e

—e

—e

—e

—e

—e

—e

—e

—e !—

A sigh of ecstasy
 So sweet and infinite
 That not the gurgling nightingale's rich serenades
 Nor e'en the skylark's luscious long-sustained cascades
 Can hold supremacy
 That spell-bound minute.
 A sigh ?

A whisper from the sunset sky,
 Which, softly sweeping down the scale of music's ocean,
 Brings tenderest echoes from the wells of deep emotion.

THE WITCHERY OF GILBERT WHITE.

REV. E. A. WOODRUFFE-PEACOCK, F.L.S., F.G.S., F.E.S., ETC.

WHY is it? What is it? Cannot analysis say on what it feeds, and why it grows with lengthening years? A quiet country parson, a bachelor, too, more by token, writes a book about the natural history of his native and much beloved village, now over a hundred and fifty years ago. After long delays it was published in 1789, or when its author was 69; that is nine years older than the date which T. H. Huxley fixed for his own retirement, and grimly suggested that men of science should be pole-axed lest through ossification of mind they should become 'arrestors of human progress.' For some reason the 'infinite variety' of this work has taken and still catches the popular taste alike of the simple and the wisest. Selborne in consequence becomes a shrine of the English-speaking race, more celebrated, if possible, than Stratford-on-Avon. Though the village of to-day is so very different from that of which Gilbert White wrote, it is an object of pilgrimage, for its eternal hills are the same, the swallows and martins twitter and the swifts screech, and the magic churr vibrating from the stationary fern-owl, or the loud clap of its wings and sharp whistle during flight, are just the same as of old.

To supply the demands of a growingly receptive republic of readers of Gilbert White's *Natural History*, no one knows the numbers of impressions that have been issued by the press of the English-speaking world. There is some doubt even about the editions that have gone forth; more striking still is the list of naturalists of repute, who have supplied everything in the shape of notes, explanations and illustrations, such as no other non-religious work has ever received. What a stately list it is—Markwith, 1802; Jardine, 1829; Brown, 1833; Bennett, 1837; Jenyns (Blomefield), 1843; Blyth and Jesse, both 1850; Wood, 1854; Harting and Buckland, both 1875; Lord Selborne, 1876; Bell, 1877; and Grant-Allen and Bowdler Sharp both 1900; not to name lesser men who have tried their 'prentice hands, or Professor A. Newton's work in the *Dictionary of National Biography* and *Macmillan's Magazine*, 1900. They have all been delighted to forward White's reputation by serving their acknowledged master's work up in an ever fresh setting of notes and illustrations. When the Sage's great-grand-nephew, Mr. Rasleigh Holt-White, brought out Gilbert White's *Life and Letters*, with notes by Professor A. Newton on all critical questions of natural history, this work was only added to the charm and witchery associated for ever with the Selborne observer's name.

What is this witchery, and wherein lies the charm? We are conscious of it more fully in his private letters than in his more stately published work, though it is there in excess when compared with other writers. What makes a Markwith, a Jenyns, and even a Sir Francis Darwin to-day a humble copyist of the Selborne master's methods? It is most certainly not his style. Though that is fairly good and always abundantly clear, it is sometimes redundant and can hardly be compared with that of some of his followers at once in clarity, distinction and music—yet apparently it will outlast them all.

The secret surely of his fascination is his method of imparting his knowledge, and his way of generalizing about it; the half unconscious grasp he possessed that the ultimately valuable thing in observing nature was those truths she kept only for her true lovers. Not the truths that other men have found out and recorded, but those still to be discovered, which any earnest worker can find out and record, anywhere and everywhere. There is an almost childish simplicity about it, for there is the ever implied but rarely stated:—‘Work as I work, here a little and there a little, but ever at it—seeking the truth every day.’ Charles Darwin has as great a reverence for truth, and a poorer style, but when the *Origin* is no longer read, a careful selection of his private letters may be, for he was too good a student of White to have wholly missed his gift. Huxley was a slave of what he believed to be ‘the white-light of truth,’ and was in possession of a style the power and grace of which are hard indeed to beat, but when the scientific writings and theories of the great protagonist of evolution are only known to students, Gilbert White will still be read by the masses. Many another strenuous controversialist is merely remembered by a chance phrase or as Toplady by his *Rock of Ages*. This association of the torpedo of Darwinism and the topknot of Calvinism, because both were mighty supporters of ‘isms’ in their day, makes one smile.

Gilbert White does not come to you with a set theory to defend, he is no controversialist, he is not artful but diffident. He does not know it all, and as he learns, you are learning with him, and study to answer his questions. This is the secret of his power to hold the attention, and of his charm together—‘come let us reason together, and teach one another.’ Let him speak for himself—no one can do it better.

‘Men that undertake only one district are much more likely to advance natural knowledge than those that grasp at more than they can possibly be acquainted with; every kingdom, every province, should have its own monographer.’—p. 154.

Except where I expressly say otherwise, I quote from J. E. Harting's 1875 edition.

There lies the unspoken—'I am content to investigate a parish.' The fact is self evident, and the reader is invited, 'to join up and do his little—as I have done.' Here is another quotation on 'the theory of the work' or 'the best way'; and it is another invitation.

'Faunists, as you observe, are too apt to acquiesce in bare descriptions and a few synonyms; the reason is plain, because all that may be done at home in a man's study; but the investigation of the life and conversation (*i.e.*, habits) of animals is a concern of much more trouble and difficulty, and is not to be attained but by the active and inquisitive, and by those that reside much in the country.'—p. 169.

Was the countryman ever made to plume himself more handsomely on his activity, inquisitiveness and rurality? White not only says 'these are the gifts you possess' to his readers, but adds in an undertone, 'Use them as I do.' So in each generation 'the mantle of this prophet' falls on a few; as for instance the ducks and duck-lore of Rainworth Lodge, and five goodly volumes of natural history prove. Where is Gilbert White more studied than there?

His own methods of work are simple enough and yet most effective—p. 144. 'For many months I carried a list in my pocket of the birds which were to be remarked, and, as I rode or walked about my business, I noted each day the continuance or omission of each bird's song; so that I am sure of the certainty of my facts as a man can be of any transactions whatever.' He never gave more valuable advice, and after following it fifty years, I can truly say so.

It is a wonderful book! No one is to be disappointed by the results he may obtain, for the individual in any case can do little. In the aggregate if all do their part, everything will be discovered. Let this prove it.

'Though there is endless room for observation in the field of nature, which is boundless, yet investigation (where a man endeavours to be sure of his facts) can make but slow progress; and all that one could collect in many years would go into a very narrow compass.'—p. 151.

Here, too, we have the same thought from the personal aspect.

'I see you—the Hon. Daines Barrington—are a gentleman of great candour, and one that will make allowances; especially where the writer professes to be an outdoor naturalist, one who takes his observations from the subject itself, and not from the writings of others.'—p. 136.

Give me original work, this Master cries! 'We can all do it. You—the reader—as well as I can—the writer. We want limited areas, plenty of time, for the work is slow, but

none the less certain. Yes, I will take you farther into my personal confidence.'

'Ray remarks that birds of the *Gallinae* order, as cocks and hens, partridges and pheasants, etc., are *pulveratrices*, such as dust themselves, using that method of cleaning their feathers, and ridding themselves of their vermin. As far as I can observe, many birds that dust themselves never wash; and I once thought that those birds that wash themselves would never dust; but here I find myself mistaken; for common house sparrows are great *pulveratrices*, being frequently seen grovelling and wallowing in dusty roads; and yet they are great washers. Does not the skylark dust?'—p. 155.

Who has not seen the sparrows 'wallowing' in the dust, amid the yellow crocuses they so often destroy, or 'grovelling' in the pools left by the April showers, ere they hang like wall-creepers with half-opened wings and outspread tails, to the bricks on any wall facing the sun. It took me just eighteen years to verify the fact that skylarks dust; longer still to observe swallows once doing so. Later still, when I had to consider 'dusting' and 'washing' in quite a new aspect, or from the position of distant seed-carriage, I found more in Gilbert White than elsewhere, for he records what he meets with even when he personally has no very special interest in the subject.

His many notes on crop and gizzard contents are most striking considering they were made a century and a half back. Here was my first suggestion for what I have called Secondary-Bird-Carriage.*

'In its—the Peregrine Falcon's craw were many barley-corns, which probably came from the crop of the wood pigeon, on which it was feeding when shot; for voracious birds do not eat grain; but, when devouring their quarry, with undistinguishing vehemence swallow bones, and feathers, and all matters, indiscriminately.' Only twice in forty years have I seen a case of secondary-bird-carriage, so rare is it to discover even when you are on the look out for it.†

What a fine grasp White had of the truth, when he wrote:—

'The standing objection to botany has always been, that it is a pursuit that amuses the fancy and exercises the memory without improving the mind, or advancing real knowledge; and, where the science is carried no farther than a mere systematic classification the charge is true enough.'—p. 247.

Then he goes on to describe what we now call ecological observation which would change botany into a 'live science.' He even noticed that white currants were not taken by birds like the red ones (p. 320); and that thrushes alone—

* See *The Selborne Magazine*, 1918, pp. 39-41.

† On this Secondary-Bird-Carriage, see Darwin's *Origin*, 6th edition, vol. II., p. 146.

not blackbirds—break the shells of snails on anvil stones (p. 322); also that many Horsebeans (*Vicia Faba* L.), as well as peas, are sown by birds (p. 361). He even suggests 'in particular by jays and pies' as sowing agents. I personally have only seen rooks doing this seeding during forty years of watching. What have other naturalists observed? This book is a work of genius and of nothing less! 'Considering its date, its range is simply wonderful. I know nothing like it in literature. Darwin, Wallace, Hooker, all had a vast grasp of facts as well as interests, but when we reflect that this is a mid-eighteenth century work, we can only say with the labouring man Whitist, 'They are mere noughters. They tell you what they've done and found out, but not how you are to do it by working yourself, as old Gilbert does! That's his secret!'

Yet in other ways White was as much the child of his own generation as we all are. This is easily detected, as for instance, in his notices of the Royal Forest of Walmer (p. 17). It was 'a tract of land about seven miles in length, by two and a half in breadth—without having one standing tree in the whole extent.' (p. 18.). In the very next letter to Pennant (p. 24) he refers to 'the rabbit pest' as we call it now, on this area, but he does not connect these two things. The restless rodent which at all costs must keep its teeth ground down—for that is the trouble—and the treeless sands, as cause and effect; though the 'subterraneous trees' under the bogs, proved that a bosky and forest state there was a thing of the not remote past. He not only pulls up Dr. Plot sharply for saying 'positively that there were never any fallen trees hidden in the mosses of the southern country' (p. 18) but in a footnote goes on to explain how their situation may be discovered on a winter's morning by the hoar frost not melting above them, where there is 'a ground thaw' in contradistinction to 'a wind or air thaw,' but he does not distinguish the two kinds of thaws. The lapwing can! It only arrives back in its spring haunts after the 'ground thaw' has done its work.

The result is a book which has outlasted the works of Pennant, Barrington and scores of others, as well-known in their day, because it not only teaches how truth must be sought, but shows the way that all must work to do anything original. So much for the *Natural History of Selborne*.

I am convinced that Holt-White's *Life and Letters* has put the Sage of Selborne in a new and truer light as a man. What more can be expected? Yet he was much more than the teacher of now four generations of naturalists how to observe and record—both difficult matters as all will allow. His letters are better than his book, because more humanly

interesting. He did not improve his style by correcting it, his sentences only grow more wordy. Look at letter 11-8-1774 in the *Life*.

'I cannot procure a grass-hopper lark' (or warbler, as we now say). 'They are such shy, skulking varlets; such troglodytes, such hedge-creepers, there is no knowing where to have them.' Again in the same letter. 'Bear is a sort of barley; Mr. Pennant should have told his readers as much in a note.' What could be clearer than the paragraph in letter 26-9-1774 on the shells of tortoises, too long to reproduce here. He freely criticises others in his letters, and often much from the point of view from which he works as a naturalist.

'Holdsworth I have procured; but cannot say the work gives me as much pleasure as it seems to have afforded you. I did not find so many genuine criticisms drawn from the face of the country and the modern practices in husbandry, as I expected; but rather a collection of parallel passages from Cato and Columella. So much easier is it to compile than to advance fresh remarks.'—(15-5-1776). That is, to observe truly.

The Rev. John Mulso writes to Gilbert White, 16-8-1780, of their old Oxford days, and White's love of sport—'What you was then is my son John now. I see him with his rod at the canal, and his gun lodged against a tree, a complicated murderer.' The last two words are splendid! We have all passed through that period, as our boys have too; as our master did, we know, had not his old friend reminded him. Then there is the play of human nature in these letters. We recognise too, exactly what Mr. Yalden meant when White asked him whether he thought a certain farmer was a likely man to recognise swallows on the 7th of April. 'He cried, "O, yes"—for he was a married man.' To which he replied 'that though a very unworthy bachelor, I presumed I knew swallows as well as most married men in England.'

True enough, and yet Yalden's philosophy was equally to the point. There are certain facts which are ever brought annually to our minds by our children or grandchildren. The advent of the swallows and cuckoos are two of them. For years I have been too deaf to hear the distant voice of the 'gowk's' calling, but I never fail to learn of their arrival before I view them.

Then there is his relationship to the politics of his age. This is the only complaint I have ever heard against 'honest Gilbert.' It has been asserted that White observed his birds and nature generally, while the world of his own day fell to pieces. What would our time have lost if he had not done so? Without the power of doing more good than he did,

had he spent all his time in talking or writing of the American revolution, who would have gained by it? The world would only have lost its ideal field naturalist for another forgotten political scribbler. His book is not so good as his letters, for it is not so rich in the varied aspects of his inner nature, the result of human kindness, for he was a truly lovable and beautiful character, at once unselfish, refined and Christian, in the highest sense, of being all things to all men, who desired bettering along the whole scale of human interests. His book gives us the natural history side, his *Life and Letters* give us the personal side. The latter is ever nearest to us all; but the former was badly wanted as the sale of so many editions shows.

He was a bachelor, please note, but the words of 'Proverbs,' XIII., 22: 'A good man leaveth an inheritance to his children's children,' will never fail of fulfilment as long as either the *Natural History* or *Life and Letters* are read, or vulgar errors and prejudices remain.

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Mr. C. Mosley, of Huddersfield, sends us drawings of two carrots which he has grown in his garden at Lockwood. One shows the carrot split and divided down the entire length—the parts being spread out, umbrella fashion. The other shows the specimen somewhat normal in shape, but split and opened out as though divided in half by a knife. These deformities probably indicate that the soil in the Lockwood garden is not all sandy loam.

Part 97 of *The Yorkshire Archaeological Journal* contains a paper on 'British Barrows round Boulby,' which yielded earthenware vessels and were therefore important, though the account of the work of examination seems rather meagre. There is also a note, with photograph, relating to 'circular stone foundations near Blubberhouses.' There is no doubt these have been tampered with, or 'restored,' and that consequently any archaeological value they may once have had, has gone. The photograph shows the stones 'whitewashed to make them more conspicuous.'

The thirtieth annual meeting of the Hull Geological Society was held in the Royal Institution, Hull, recently. The Secretary's report showed that the past year's work had been very satisfactory, although the lack of railway facilities, and military exigencies, had prevented the carrying out of geological investigations in the more remote parts of the East Yorkshire area. Local quarries and exposures had been visited with good results. Now that the war was over, and the younger members were coming back, it was confidently hoped that the coming season would witness a renewed interest in the fascinating science of geology. The Treasurer's report showed that the financial position of the society was very satisfactory, and that there was a good balance in hand to be used towards the printing of the society's Transactions. Mr. C. B. Newton, the Hull Waterworks Engineer, was elected president of the society. The other officers elected for 1919 were as follows:—Secretaries: W. H. Crofts and J. W. Stather; treasurer: J. H. Wilson; recorders: T. Sheppard, M.Sc., and C. Thompson, B.Sc.; excursion secretary, W. C. Ennis, B.Sc.; special committees: the East Riding Glacial Committee and Photographic Committee were also appointed. A vote of congratulation and good wishes was passed to Mr. G. Sheppard, B.Sc., on his appointment to an important geological post in Canada.

YORKSHIRE NATURALISTS AT COXWOLD.

WITH a County possessing such diversified scenery it might be invidious, and perhaps controversial, unduly to assert that the members of the Union were indeed wise in choosing Coxwold for their inaugural excursion for the present year ; a more charming and peaceful place could scarcely have been decided upon. This pretty village nestling at the southern end of the Hambleton Hills possesses an old-world charm eminently satisfactory to the nature student, and the glorious weather which prevailed—a touch of the real springtime—



Photo by]

Gormire Lake.

[H. E. Wroot.

added to the completeness of the joy which was felt by all who were present, although the attendance was hardly up to expectations. The whole life of nature was only too ready to respond to the sunny days, and never a shadow crossed the happiness of those who attended the excursion ; even when rest was taken from work in the field memory was enriched by the magnificent views which everywhere prevailed.

The President of the Union, Dr. W. G. Smith, was in attendance throughout the excursion, and the members greatly enjoyed his many chats upon the ecological features of the woods and moors which were traversed.

Under the guidance of Mr. Willis, of York, the party

Naturalist.

shortly after noon on Saturday, April 21st, went by way of field path and delightful country lane to the village of Oldstead, cosily situate in a sheltered hollow; afterwards proceeding through Snever Wood, eventually reaching the moor top near to the small commemorative tower known locally as the 'Observatory.' From here the party descended through the woods, which were rich in excellent examples of conifers, to the hamlet of Wass. On the way back to Coxwold an inspection was made of the ruins of Byland, the largest of the Cistercian Abbeys of Yorkshire.

In the evening the President opened a discussion on the 'Vegetation of Flushes,' pointing out many interesting features which this phase of ecological study embodied, and also dwelt upon the economic importance of flushes in the improvement of pasturage.

On the following day after inspecting the pretty village of Kilburn, the road was taken to Scotch Corner, up the old Herd Road, on to the moor top, some of the party going forward to Gormire Lake, and the remainder proceeding down Sutton Bank, examining the ground along the base of Roulstone Scar, afterwards climbing to the summit of the Scar, then to the famous 'White Horse' of Kilburn, white no longer owing to lack of attention.

On Monday a visit was first paid to the grounds of Newburgh Priory and afterwards, thanks to the kindness of Mr. Greevz Fysher, the party was conveyed by his motor to Wass. An investigation was made of the woods and ghylls in the immediate vicinity of Wass Bank, and on reaching the top of the Bank the party crossed the Byland Moors, returning to the village of Wass through Raven Ghyll.

At the customary meeting held at the close of the excursion the President occupied the chair, and after eight new members had been elected, sectional reports were given, and thanks accorded to Lady Julia Wombwell for permission to visit her estates; to Mr. Willis for acting as guide, and to Mr. Fysher for so freely granting use of his motor car.—W. E. L. W.

VERTEBRATE ZOOLOGY.—Mr. Wattam writes:—Bird life was fairly abundant. Of migrants the following species were noted:—Willow Warbler (Coxwold and Oldstead); Yellow and Grey Wagtails (Snever Wood); Common Curlew (Roulstone Moor); Ring Ouzle (Byland Moor). Mr. T. Cockerline reported having heard the Cuckoo at Oldstead on the 18th April. Nests of Blackbird, Song Thrush, Missel Thrush, Robin, Pheasant and Grouse, containing eggs were found. The Rook, Jackdaw (Roulstone Scar), Peewit, Hedge Sparrow, Great Tit, and Chaffinch were not uncommon birds. Mr. Simpson reported having heard the 'call' of an Owl, and the

'drumming' of Snipe during a walk on the evening of the 19th April.

A specimen of the Common Lizard was captured by Mr. Mason on Roulstone Moor. Frogs and Toads, especially the latter, were in great abundance at Gormire Lake.

CONCHOLOGY.—Mr. Greevz Fysher writes :—The beautiful fine weather kept most of the living terrestrial mollusca out of sight, and the food plants were late and scanty. The following species, identified by Mr. John W. Taylor, M.Sc., were obtained alive :—*Hyalinia cellaria*, *H. alliaria*, *H. nitidula*, *H. pura*, *Pyramidula rotundata*, *Helix hortensis*, *Helicigona lapicida* (Roulstone Scar), *Ashfordia granulata*, *Vallnia pulchella*, *Clausilia bidentata*, *C. laminata*, *Pupa umbilicata*, *Zua lubrica*, *Limnea peregrina*, *Planorbis leucostoma*, *Valvata cristata*. Four or five of the commoner kinds of slugs were observed, as well as dead shells of *Helix aspersa*, *H. nemoralis* and *Vitrina pellucida*.

FLOWERING PLANTS.—Mr. Wattam writes :—The flowering plants were freely responding to the genial conditions. Conspicuous blossoms along the hedgerow banks were tuberous moschatel, sweet violet (with white form), primrose, cowslip, ivy-leaved speedwell, and purple dead nettle. Near the village of Oldstead was noted an abundance of *Chrysosplenium alternifolium*, *Geranium phaeum*, toothwort (on roots of broad-leaved elm), greater celandine and *Equisetum maximum*. Near the summit of Oldstead Bank the stinking hellebore was a wonderful sight, and most prolific, and spurge laurel was likewise a common plant of the hedgerow. Marsh marigold glorified the swamps ; the ground carpet of the woodlands was primrose, wood anemone, dog's mercury, wood sorrel, wood sanicle, and broad-leaved garlic. The woods near Wass contain some excellent examples of conifers, among the species noted being the Wellingtonia, the dark-leaved and glaucous-leaved forms of Douglas Fir, Lawson's Pine, Silver Fir, Spruce, and Austrian Pine. In the Woods alongside Wass Bank goutweed is common ; toothwort on the roots of Sycamore was also noted, and Dr. Smith pointed out that the abundance of *Luzula pilosa* here was indicative of the purity of the water supply. During Saturday's excursion traces of the primitive oak wood, which formed the earliest woodland of the escarpment, were observable. Many of the large coniferous plantations, particularly in the neighbourhood of Wass, had been completely felled, whilst others had been thinned of their most useful commercial timber.

MYCOLOGY.—Mr. F. A. Mason writes :—Owing to the backward season, few really typical spring species were noted and agarics were comparatively rare. The larches in the Wass Woods were seen to be suffering badly from Larch Disease, while

those on the Newburgh Estates were affected to a considerably less extent. Few polypores were noted, the birch trees being fairly free from attack by *P. betulinus*. The following list gives the species recorded, those denoted by an asterisk having been kindly identified by Miss E. M. Wakefield, of Kew :—

In the Woods at Wass :—

- | | |
|---|---|
| <i>Collybia velutipes</i> (Curt.) Fr. | <i>Scleroderma vulgare</i> Fr. |
| <i>C. dryophila</i> Bull. | <i>Nectria cinnabarina</i> Tode. |
| <i>C. platyphylla</i> Fr. | <i>Diatrypella quercina</i> Pers. |
| <i>Polyporus betulinus</i> (Bull.) Fr. | <i>Xylaria hypoxylon</i> Linn. |
| <i>P. hispidus</i> Fr., fallen weathered specimens. | <i>Dasyscypha virginia</i> Batsch. |
| <i>Fomes annosus</i> Fr. | <i>D. nivea</i> Sacc. |
| <i>Polystictus versicolor</i> Fr. | <i>Trichoscypha</i> (= <i>Dasyscypha</i>) <i>calycina</i> (Schum.) Fckl. |
| <i>P. hirsutus</i> Fr. | <i>Hyaloscypha</i> (= <i>Dasyscypha</i>) <i>hyalina</i> (Pers.) Boud. |
| <i>P. abietinus</i> Fr. | <i>Mollisia cinerea</i> (Batsch.) Karst. |
| † <i>Irpex obliquus</i> (Schröd.) Fr. | <i>M. melaleuca</i> (Fr.) Sacc. |
| <i>Stereum hirsutum</i> (Pers.) Fr. | <i>Stegia ilicis</i> Fr. |
| <i>S. purpureum</i> Fr. | <i>Rhytisma acerinum</i> (Pers.) Fr. |
| <i>S. rugosum</i> Fr. | <i>Phoma samarorum</i> (Desm.) Sacc. |
| <i>Corticium lacteum</i> Fr.* | <i>Trichodema lignorum</i> (Tode) Harz.* |
| <i>Coniophora puteana</i> (Schum.) Fr.* | <i>Tricothecium roseum</i> (Link.) Grev.* |
| <i>Exidia glandulosa</i> Fr., on ash logs.* | <i>Botrytis cinerea</i> Pers. |
| <i>Dacryomyces deliquescens</i> Bull. | |
| <i>D. stillatus</i> (Nees.) Fr. | |

In the fields, Coxwold to Byland :—

- | | | |
|---------------------------------------|--------|---------------------------------------|
| <i>Coprinus radiatus</i> (Bolt.) Fr.) | On | <i>Panaeolus campanulatus</i> (Linn.) |
| <i>C. ephemerus</i> Fr. | manure | Fr. |
| <i>C. fimetarius</i> Linn. | heap. | <i>Lycoperdon pyriforme</i> Fr. |

On hedgebanks :—

- | | |
|---------------------------|--|
| <i>Uromyces poæ</i> Rabh. | <i>Sclerotinia sclerotiorum</i> (Lib.) Schröt. |
|---------------------------|--|

The ivy covering the walls of Coxwold Station was attacked by *Phyllosticta hederaecola*, Dur. and Mont.*

Owl-pellets, collected in the woods, on moistening, developed

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|-----------------------------------|------------------------------|
| <i>Mucor mucedo</i> (Linn.) Bref. | <i>Mucor racemosus</i> Fres. |
|-----------------------------------|------------------------------|

The latter species although rarely recorded in the field frequently appears under cultural conditions.

Three species of mycetozoa were found :—

- | | |
|---|---|
| <i>Badhamia macrocarpa</i> Rost., on Pine logs, Newstead. | <i>Trichia affinis</i> de Bary. Wass Woods. |
| | <i>T. Botrytis</i> Pers. Wass Woods. |

BRYOLOGY.—Mr. W. Ingham, B.A., writes :—The best ground for Mosses and Hepatics at Coxwold is in the wood opposite Byland Abbey. Along a small rill the prominent moss is *Mnium punctatum*, both male plants and fruiting plants being common. Another moss, *Mnium rostratum* fruits

† Several normal specimens of this species were found, but one example showing an unusually even development of the 'teeth' was forwarded to Miss Wakefield, who reported :—" *I. obliquus* (probably form of)." "

freely there, the same moss being invariably barren in the limestone districts of the Vale of York. Strange to say, the moss *Mnium hornum* which covers the ground at the foot of trees in other woods is sparingly produced in this wood.

Higher up the wood, a rare moss *Mnium stellare* occurs, both male plants and fruiting plants. The fruit of this moss according to Braithwaite's British moss Flora, has hitherto been found only in Derbyshire and Herefordshire. *Mnium undulatum* also grows here.

Tortula subulata was found in abundant fruit, also *Barbula cylindrica*, and *Barbula recurvifolia*. A patch of *Pylaisia polyantha* was found, and on a sloping clay bank *Hypnum stellatum* var. *protensum*.

Weisia viridula and *W. microstoma* grow in this wood. *Hypnum cupressiforme*, *Eurhynchium myurum*, and *E. myosuroides* were sub-dominant mosses of the wood.

Of Hepatics, *Pellia epiphylla* is dominant, and covered with fruit, also *P. fabbroniiana*, and in one place *Fossombronina pusilla* was found in abundant fruit.

No Sphagna were seen in this wood.

COLEOPTERA.—The Coleoptera Committee was represented by Mr. M. L. Thompson and Dr. Fordham, who write:—Fifty-two species of beetles were met with; none of them, however, being new to V.C. 62.

Mr. Thompson found twenty-four species in Elm Hagg Wood, the most noticeable being *Badister sodalis* Duft. (two specimens of this uncommon species); *Dianous cærulescens* Gyll., *Corticaria elongata* Gyll., and *Barynotus elevatus* Marsh.

Mr. Wattam reported *Necrophorus humator* Goeze., *Silpha thoracica* L., and *rugosa* L. in carrion.

Dr. Fordham worked the lower part of Ravensgill and found beetles commonly sunning themselves on a wall by the side of the wood. *Polydrusus cervinus* L. was very abundant, together with several *Hylastes palliatus* Gyll. and *Myclophilus piniperda* L., and many other commoner species.

Amara ovata F. occurred on the road at Byland and *Bembidium* 4. *maculatum* L. was taken under a stone.

DIPTERA.—The handsome bee-like *Bombylius major* L. was common in the wood at the lower part of Ravensgill and occurred on the path and on primrose flowers. Specimens of *Musca corvina* F. and *Sepsis cynipsea* L. were also taken.

HEMIPTERA.—The only bugs taken were *Lygus pratensis* L. and *Anthocoris nemoralis* F.

HYMENOPTERA.—The sawflies *Dolerus hæmatodes* Schr., *D. nitens* Zadd. and *Monophadnus albipes* Grinl. (kindly identified by Rev. F. D. Morice, M.A.), were taken near Byland Abbey. The two latter are not previously on record for the county.

THE NIGHTMARE OF NAMES IN THE BED OF ROSES.

F. ARNOLD LEES, M.R.C.S.

IN half a century's Wild-rose study, no single fact has struck me so insistently as that, quinquennial after quinquennial, intermitting inspection of the same bush, or colony of bushes, fails ever to quite match the gatherings of some prior date ! To be expected of growing things ? Yes ! but we don't realise it always that their cell expressions change with time as human tissues are fabled to do, completely in less than a generation. Then what of the defined names given them in the ' Books ? ' If these no longer fit, should not one or the other be altered ? As for the divergencies in frond contours or armature, which result from transitory conditions, or quite local but more permanent stresses, in air as in water, did not W. P. Hiern, for the marginal expansions of leaves in the Batrachian *Ranunculi* shew that they are almost capable of expression in terms of mathematics ? These stresses are obviously unappreciable by our eye, just as wind is, but its action may safely be inferred from the result. There is, however, yet another powerful ever-acting factor in vegetal volteface ; the *Insecta* that eclectically visit this or that flower-basket, and, more or less, effectively smirch the sensitive reproductive elements with such contagion as they may carry. All this may be an essential platitude, but we must not forget it on that account, when studying the cross influences complicating plant-character.

The truth is that among the wild-roses of the hedge or field towan, or rocky hillslope, a similar process—flower-time's Valentine Day—of inter-marrying is being conducted as takes place among humans, only more promiscuously. The event certainly is that the growth—easy to dub ' hybrids ' or *rosicrosses* and have done with it, though it settles nothing—of (say) *Rosa mollis*, *pimpinellifolia*, *Eglanteria* and *canina*—the progeny growths springing from one or other or possibly three of these four, are not in themselves stable, year after year, as is what we botanists beg the question by styling a ' strong ' species ; but are mutable, and variable in both vegetative particulars, ovarian maturation, and the ripening of viable seed. This is, I have long been convinced, despite the nightmare of names that contradict one who ' lays ' on this ' bed of Roses,' due to the growths both in the ' wild ' and the hortial garth, being pollenerised in successive seasons by different cousin roses ! An example to the point, since it can be demonstrated by preserved specimens may be given. On August 16th, 1893—a nigh Tropic summer time—walking with the late J. Farrah and A. Millward of Harrogate, along the north side of the rural highway leading from Nidd Hall to Brearton, in the rampant hedge west of the well-known ' Beef-steak ' (fungus) bearing Oak, grew more than one huge rambling and grimpt bush of agrestal *Rosa canina*, every leaflet bedewed with a host of clear glistening glands—a sight to see, and not seen in York before by any of us !—each flowering branch orgillous with a fan of 3 to 5 or 7 smooth peduncled blooms. This Gilbert Baker unhesitatingly determined as *Rosa agrestis* Savi, practically the same thing as a later defined *R. septium* (a hedge rose) of Thuillier. Abundant material was collected and preserved *secondum artem*, to the destruction of course, of the diamantine gemmation. Sixteen years later (August 8th, 1909) with Arnold Bradley, I again visited the Brearton Lane oak and rose, to find the lovely untidy hedge rose of '93 had been hacked down, so impinging tilth-crop should not be screened off from forenoon light, and the five or six main laterals of the particular rose growth half-severed and horizontally wattled—' plashed ' is the rustic's term, I believe—after hedger-and-ditcher's fashion, to form a sort of firm low rail fence. This had by no means killed the Rose, for in all parts re-growth on a larger scale by mere

measure had taken place, a few withy arms having attained flowering age ; but with this result : the facies had been transmogrified ; and, though glandulous, the plant would no longer pass as *agrestis* Savi. at all ! It now answered much better to Baker's *frondosa* or *arvatica* in leaf serration and glandulosity ! The difference the passing of years (some few—4 or 5 at any rate)—plus the hedger's catchery and the renewed stimulus (pollenergy) of the nigher-growing un mutilated dog-rose pollinia was as amazing as immense ; an object lesson that gave one pause in that impulse to label which is a botanist's pitfall, if not booby-trap, and made one 'furiously to think' as the *Rosa gallica* fraternity phrase it. Anyone who had not been able to take oath as to the identity of the stock, must have referred the product of 1909 to a quite different section of the genus. In the main, however, it was only the gland furnishing and vegetative characters that had changed. The clumping of bloom and the pretty and profuse pinnation of the sepals remained ; but the leaflets in the best developed were much more regularly doubly serrate, so that they had come to resemble nothing so much as the sphygmograph's tracing of a normal heart's beat ! Leaves may be simply or doubly serrate, subserrate or irregularly (non-uniformly) half one and half another in those minor fissions or lobations we call tooth-like ; there must be a reason for each effect, but it has in the past proved a mistake to divide up Roses into groups by any such marginal casualties ; let alone, the convenient elastic but stultificatory use of 'plus-minus'—more or less, to qualify such an adjectival term as hairy, glanduliferous, or what not : Nature mingles these ticks and currents, for us hap-hazard ingredients indeed, in the confections she sets before us. The solution of the puzzle—if a deduction may be a solution, may seem cryptic to all but experienced Rose students : the stock is still, as it must be, Savi's *agrestis*, Thuillier's *sepium* ; but it has evolved or developed not into Baker's *arvatica* (a softly grey-hairy dog-rose), but into Puget's *arvatica*, a name founded most likely upon a *stage* in growth with a passing facies, represented in the London Catalogue, I believe, by No. 595, b. *Billietii* of Hooker fil. These rose names are very difficult to allo- and collo-cate with the growth of any site.

A similar mixty-maxy of likes and unlikes is also seen in the case of that famous ill-understood Calder Vale rose first recorded for Luddenden Dene by S. King—*R. inodora* Fries., var. *cryptopoda* Baker, and now after half-a-century known only in that nude, almost scentless (debased ?) soft rose, with mingled younger straight and older hooking prickles (suggestive of the Eglantine), which grows here and there, small single bushes, on the north bank of Tag Lock, that disused lander of the Aire and Calder Company, a third of the way west from Brighouse towards Elland. Call it what one will, not altogether the same in physiognomy from year to year, there it still survives to bewilder us of the exigent botanic Eye who look for everything on one root to be unvarying in its outward presentment. Nature and tricky six-leg wooers if they cannot laugh at us, for all that play pranks with our understanding, sunlight or moonlight, wet or fine, every season by every bank of verdure-clad earth. A Midsummer Night's (and Day's) Dream of the Roses Family ! Yes, and the particular stage-entities, Baker, Crepin, Déséglise and others of that ilk gave names to, 'are not,' just there, now, and their successors in their seats answer best to other nomina.

A probably parallel story lies behind the cloud of doubt which surrounds that curious 'Cross' rose from Knipe wood maquis and talus-screed declivity hard by Kettlewell. Joseph Woods and William Curtis were there 75 (or so) years ago, and recorded roses *spinosissima*, *involuta*, *villosa* and others thereabouts, where now grow scattered examples of the first and third here named ; along with root-stocks of a larger spiny hybrid which after having transplanted into his wild garden at Grey

Gables the late Sam Margerison showed to me, near some clump bushes of *R. Eglanteria* (sweet-briar) and *R. cinnamomea*. These were so clearly an undescribed cross that they soon came to be acceptably distinguished and defined as \times *R. Margerisoni*. The transplantation to rose-students' gardens has not yet solved the paternity or nominal identity, likely enough at first they were the '*involuta*' of Wood's time, preserved, to undergo, at Margerison's unintentional command, a still further modified lease of life through pollination with some rose that never grew on their original mountain limestone foot of earth.

And I fancy—though I have not the same familiarity with their mutations—on like lines of fertilisatory interventions and promiscuities, are the Brambles—botheration!—perhaps also the Willows (though these are not capable of such bewildering variation; and, notoriously those Scanian air-colonisers the Hawkweeds. Speculation that way to me, however, madness lies; and their study, for who cannot visit their strongholds in the mountains of the North ever any more, with a hawk's eye for the veils of variation each wild garden can assume, were a vocation thrown and profitless indeed.



The illustrations of birds' heads given on page 189 are of the House Sparrow, Hedge Sparrow, and Corn-Bunting respectively.

Our congratulations to Mr. G. C. Druce, M.A., the well-known botanist, who has been awarded the degree of LL.D., *honoris causa*, by the St. Andrew's University.

Dr. H. Smith Woodward has been unanimously chosen as the new President of the Linnean Society of London. It is the first time this distinguished honor has been conferred on a Palæontologist.

Under the title of 'The Latest Pre-historic Man's Nest,' Sir Henry H. Howorth, K.C.I.E., F.R.S., the President of the Museums Association, severely criticises Mr. J. R. Moir's alleged carved chalk Mammoth.

We are glad to notice the name of Sir Richard A. Gregory in the recent honours list. Prof. Gregory, as he was more familiarly known, has been responsible for the editing of *Nature* for many years, and in several ways used his influence in championing the cause of Science in this country.

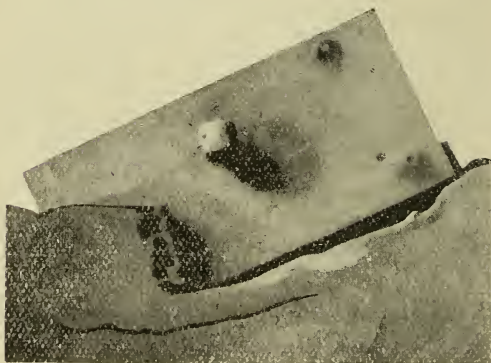
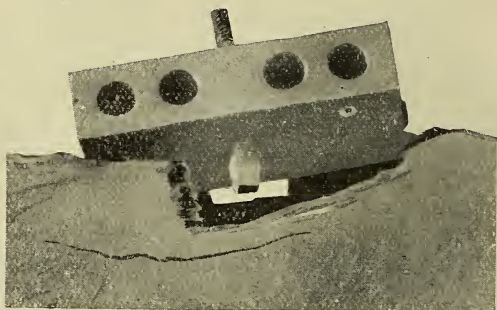
The collection of British birds made by the late Fergus Monteith Ogilvie, consisting of 238 cases, has been presented to the Ipswich Museum by Mrs. Ogilvie. The collection is said to be second to that in the Booth Museum, Brighton. We have not seen the Ogilvie collection, but should imagine that the series of birds included in the combined Sir Henry Boynton, Pease, and Riley Fortune collections in the Hull Museum, which include about 450 cases, would be a good second.

We notice from a contemporary that Mr. A. M. Browne-Anderson, Curator of the Folkestone Museum, is appealing for gifts. It is stated that he is the author of 'The Vertebrate Fauna of Leicestershire and Rutland.' We have an idea that the book in question was written by Mr. Montague Browne, at one time Curator of the Leicester Museum, so that either our friend has been re-labelled or there must be a work on Leicestershire and Rutland with which we are unacquainted.

At a recent meeting of the Lancashire and Cheshire Entomological Society, Mr. W. Mansbridge read his report as Recorder of Lepidoptera for 1918. Four species new to Lancashire and Cheshire had been recorded since the last report, viz. :—*Liparis monacha* and var. *eremita*, *Bryophila muralis*, *Mixodia palustrana* and *Anacamptis albipalpella*. Exhibits were as follows, viz. :—by Mr. W. Mansbridge, an asymmetrical ab. of *Sesia ichneumoniformis* having the left wing tip yellow instead of red; he also shewed living specimens of *Lithocolletis quercifoliella*, *L. viminiella* and *L. sorbi*.

FIELD NOTE.

Spring-gun enclosed in Oak Tree.—While sawing a huge trunk of English oak recently, Messrs. Laverack and Goddard, of Hull, found embedded in the centre, a poacher's iron alarm gun or spring-gun of an early type, similar to one in the Horniman Museum, London. Evidently at some period the alarm gun had been affixed to the trunk of



the oak tree and gradually was entirely encased by the growing timber. There was no trace whatever on the outside of the log of anything of the kind being inside, and it was only when the teeth of the circular saw cut the piece of iron that the discovery was made. The Spring-gun, as well as the oak in which it was embedded, have been handed over to the Hull Museum authorities by Messrs. Lavarack and Goddard.
—T. S.

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The Proceedings and Report of the Ashmolean Natural History Society of Oxfordshire for 1918 are largely occupied by 'Additions to the Berkshire Flora,' by G. Claridge Druce.

Naturalist,

CORRESPONDENCE.

FORMER STATUS OF THE STARLING.

THE following words in Mr. Jourdain's notes under the above heading would seem to suggest that this bird depends upon trees for breeding sites—'large tracts of treeless country devoid of breeding sites.' Here, in the Scarborough district, with a full average amount of woodland the Starling's most usual nesting haunts are holes in buildings, cliffs, quarries, etc.. Probably the removal of every tree in the district would have very slight, if any, effect in reducing the abundance of our breeding Starlings.—W. GYNGELL, Scarborough.

REFERRING to Mr. Jourdain's remarks on this subject (*The Naturalist*, May 1919, p. 183), may I repeat that I am quite aware that the Starling is much more numerous and evenly distributed in Britain than in former years, but while admitting this, are we quite sure many of the traditions handed down—more particularly between the years 1835-45, as to its absence or scarcity are all to be trusted. If so, it cannot be said that the writers on ornithology have been very successful in describing the status of the Starling !

Mr. Jourdain writes that Mr. Neville Wood resided in the Dove Valley and had no personal acquaintance with Lancashire, but still he writes that the Starling is *equally* and *plentifully* distributed over the British Islands, and this is dated April 1836; the Rev. L. Jenyns in his work published in 1835 mentions the Starling as a plentiful and widely dispersed species, and Allis writing in 1844 states that the Starling is universally common. If these writers are correct in their descriptions of the status of the Starling during the years 1835-45, some of the traditional accounts which have been handed down can scarcely be considered as accurate. At any rate, both statements cannot be true, and it was with a view to elicit more information that I first wrote on this subject. I hold no brief for either side of the question which is here presented, and have approached the subject with an open mind, and do not wish the truth to be on *my side* so much as to be on the side of the *truth*. The subject of my enquiry can be solved by facts, and these only. I do not wish to traverse Harvie Browne's statements as to the distribution of the Starling in Scotland, so much as to call attention to the fact that in some portion of Scotland at least there are two sides to the question and this statement applies equally to Yorkshire. As regards Ireland, I think it can hardly be supported by facts, that the Starling as a breeding species is of recent date, as has been alleged.—E. P. BUTTERFIELD, Wilsden.

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The *Transactions of the London Natural History Society*, 1917, 47 pages, price 3/-, contain reports on the various sections of the Club's work, Birds of Epping Forest, and a paper on 'A Spring and Summer at Oxshott,' by Russell E. James, F.E.S. The Club makes a mistake in numbering the pages of advertisements and in printing advertisements on the same sheet as the printed matter, especially when there is a blank page.

Mr. J. F. N. Green has two interesting papers bearing on the Lake District in the *Proceedings of the Geologists' Association*, Vol. XXIX., part 3, for 1918 (published 1919); these are The Mell Fell Conglomerate, and the Skiddaw Granite; a structural study.. In the same Proceedings Mr. C. Davies Sherborn gives particulars of the dates of publication of the various parts of the Association's Proceedings since 1859, which will be valuable to those Bibliographically inclined, and useful to workers using this series of publications.

NEWS FROM THE MAGAZINES, etc.

In the *Geological Magazine* for April, Dr. David Woolacott has a paper on Borings at Cote-field Close and Sheraton, co. Durham (Permian and Coal Measures).

Mr. James Ritchie writes on 'Animals and Man,' in *The Scottish Naturalist* 'Nos. 87 and 88,' for 'March-April.' (Why not have simplified matters by labelling the part 'No. 87 for April?')

The Search for Petroleum in Derbyshire now in Progress, by Theodore Sington, is the title of a paper in the 'Transactions of the Manchester Geological and Mining Society,' Vol. XXXVI., part 3. Mr. Sington's paper confirms the opinion already expressed in these columns that the oil prospects are not very hopeful.

The Museums Journal for May contains various papers referring to the Museum in relation to the school, which were read at the Manchester Conference of the Museums' Association last year, but which, as already pointed out in these columns, did not convey much new information to progressive museum curators. The same number contains a short note, 'Local Museums and their role in national life,' by Mr. Renouf.

In *The New Phytologist*, Vol. XVIII., No. 1, are the following notes under the general heading of 'The Reconstruction of Elementary Botanical Teaching'; 'Academic Botany and the Farm and Garden,' by T. W. Woodhead; 'On some aspects of the Plea for Reconstruction,' by V. H. Blackman; 'No Department, the door of which should not be opened,' by F. W. Oliver, and 'What is Botany,' by F. F. Blackman.

In *Science Progress* for April, Major R. A. Marriott has an article entitled 'The Ice-Age Question Solved.' In this he tries to show that as a result of the researches of 'Drayson,' all the difficulties of geologists with regard to the cause and date of the Ice Age, are removed. Though Major Marriott gives numerous references to papers and notes, important and otherwise, he gives not even the remotest hint as to where the researches of Drayson, upon which the whole paper is based, are to be seen.

We learn from the *Museums Journal* that:—'A striking illustration of the popular belief that any kind of training fits a man to do museum work has been experienced by a well-known public museum. In response to an advertisement of a vacancy on the scientific staff, among about a score of applicants were a political agent, a marine engineer, a foreman of public works, a storekeeper, an insurance agent, three clerks, three ex-soldiers (one "with five medals and expecting at least one more"), three schoolmasters, three Ministers of the Gospel, and only three museum officials.'

The Lancashire and Cheshire Naturalist for March, received May 3rd, is almost entirely occupied by a further instalment of H. J. Wheldon's 'Fungus Flora of Lancashire.' From a short note at the end we gather that the Editor, Mr. W. H. Western, severs his connexion with the journal at the close of this, the tenth volume of the New Series. He points out that hitherto the journal has been practically the work of one man, but that in future will be conducted by a Committee. Lancashire and Cheshire and other naturalists should certainly be grateful to Mr. Western for his efforts to keep this journal alive for so long.

With reference to Mr. R. Moir's paper in *Man* dealing with an alleged palæolithic carving, which we pointed out in *The Naturalist* for March was no doubt a quite natural object, and showed no evidences of human workmanship; this opinion has since been voiced by others in *Nature*, *The Geological Magazine* and even in *Man* itself, and in reply to a note in the first-named journal by Mr. C. W. Andrews of the British Museum, Mr. Moir naively states that the owner of the object hopes to exhibit it at a meeting of 'some learned Society,' where an examination can be made. It is a pity that this suggestion had not been acted upon before Mr. Moir published his extraordinary article. Probably any geologist could have told him what this specimen was, had enquiry been made.

Naturalist.

31 MAY. 1919



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Contents :—

	PAGE
Notes and Comments:—The Mycetoza, and their Habits; Refractory Sands; Coal and its Scientific Uses; Our Whales. etc., in 1918; Previous Records; Beneficial Birds; <i>The Vascolum</i> ; The Naturalist's Note Book, New Series; Educational Gardening; The Life of the Grasshopper; Distribution of Marsh Ringlet; The Y.N.U.; Ice Transport; Yorkshire Shelly Drift; A Well-armed Glacialist; Anchor Ice; Another Museum for Hull ...	217-224
The Jew's Ear Fungus (<i>Hirneola auricula-judæ</i> Fr.) illust.—Walter Johnson, F.G.S.	225-230
More Songs of the Birds—Prof. W. Garstang, M.A., D.Sc. ...	231-233
The Bristly Millipede in North Lincs.—T. Stainforth, B.A., B.Sc. ...	234
The Spiders of Yorkshire—Wm. Falconer ...	235-238
Westmorland Coleoptera—F. H. Day, F.E.S. ...	239-242
The Bristly Millipede at Saltwick Bay, nr. Whitby (illust.)—J. Wilfrid Jackson, F.G.S.	243-244
Field Notes:—Yorkshire Diptera Notes; Large Yorkshire Trout; <i>Vertigo pygmaea</i> Drap.; A Freshwater Sponge ...	244, 245
Correspondence:—Harmful and Useful Birds; Undocked Dogs the Quicker; Do Leaves want Watering? ...	246-247
Review ...	230
Proceedings of Provincial Scientific Societies ...	242
News from the Magazines ...	245
Northern News ...	233, 247-248
Illustrations ...	225, 243

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NOTES AND COMMENTS.

THE MYCETOZOA,*

Whether we regard these organisms as plants or animals they seem to possess great charm to those students who have some insight into their life history and microscopic structure. It is evident by Miss Lister referring to them as 'creatures' that she regards them as Protozoa. The Memoir is full of interesting matter from beginning to end. Chapter I. refers to the study of Mycetozoa in Britain and traces the work from John Ray (1627-1704), Dillenius (1684-17-), and Sir John Hill (1716-75) to the Rev. M. J. Berkeley, M. C. Cooke, George Massee and Arthur Lister of our own times. The authoress dwells charmingly on her father's work; how he was attracted by the orange coloured plasmodium of *Badhamia utricularis* and the experiments made during its cultivation, revealing the mysterious rhythmic circulation, the movements of the plasmodia, the absorption and digestion of bacteria by the swarm-spores, the mitotic division of the nuclei in young sporangia and of the changes induced in maturing sporangia by differences of heat and cold or of drought and moisture.

AND THEIR HABITS.

Chapter II. is on 'The Habitats of Mycetozoa generally,' and contains much new and valuable information on their preferences for different kinds of food, explaining why certain species are generally associated with certain situations; a list is given of habitats and food materials and the species usually found under such conditions. This information, the result of years of observation and experience, appears for the first time in print, and students will warmly welcome this helpful knowledge. Chapter III. is devoted to 'the Mycetozoa of Essex,' each species recorded for the county is passed in review and notes made on the rarity or abundance, and easy means of field identification, concluding with a comparison table of three other county records. The frontispiece is a reproduction of a drawing by the authoress of three rare species which have been found in the county of Essex, and there is a good index. The Memoir will be of great assistance to beginners, and contains much useful matter for experts.—W. N. C.

REFRACTORY SANDS.

Prof. P. G. H. Boswell has issued a memoir on British resources of Refractory Sands for Furnace and Foundry

* A short history of their study in Britain; an account of their habitats generally; and a list of species recorded for Essex. Essex Field Club Memoirs, by Miss Gulielma Lister, F.L.S., London: Simpkin, Marshall and Co., demy octavo, 54 pp. Cloth, 3s.

purposes.* The memoir is published at the instruction of the Ministry of Munitions of War, at the Imperial College of Science and Technology and the University of Liverpool. It deals in detail with sands from various parts of this country and abroad, from the point of view of their suitability for foundry purposes; detailed analyses are given, together with numerous plates showing micro-photographs, and there are maps showing the distribution of these minerals in England and Ireland. Elaborate chemical analyses are contributed by H. F. Harwood and A. A. Eldridge; the whole forming a valuable contribution to a subject which has been brought prominently before the manufacturing world since the sources of supplies of these sands from abroad have ceased.

COAL AND ITS SCIENTIFIC USES.†

Both author and publishers are to be congratulated on producing this valuable volume at a time when such a work is so urgently needed. The Coal shortage which has caused so much trouble and inconvenience in recent years is one which might be obviated, or at any rate the difficulties might be considerably lessened, if the contents of this useful book were read and digested by everyone connected with manufacturing and other industries consuming Fuel. We have innumerable works dealing with the general geological and botanical aspects of coal, but Prof. Bone is the first to put clearly and concisely the case for the practical use of Coal scientifically considered. Throughout his work, the author has consistently endeavoured to give prominence to the underlying scientific principles in connection with the technical applications of Coal. He also deals with the chemical composition of the mineral on the lines of recent research; the combustion of Coal and its application to industry and domestic heating. Information is also given relating to the abatement of smoke, the gasification of Coal, and a discussion of the problems in connection with Fuel economy, particularly in relation to the manufacture of iron and steel, in which connexion Great Britain is notoriously behindhand when compared with America and the Continent.

OUR WHALES, ETC., IN 1918.

Dr. S. F. Harmer has recently published his Report on Cetacea stranded on British Coasts during 1918, this being the sixth of this valuable series.‡ Dr. Harmer first gives details of corrections in previous reports, and then enumerates

* Part 1. Taylor and Francis (248 pp.) 8s. 6d. nett.

† By Prof. W. A. Bone, pp. xv. + 491, Longmans, Green and Co., 25s. nett.

‡ 24 pages with Map, British Museum (Nat. His.), 3s. 6d.

particulars of 41 examples of Cetacea, records of which he has obtained from various parts of the British Isles. There is also a list of the literature dealing with the subject. In this particular report, records relating to the Northern Counties of England are rather scanty, the only references being to a Porpoise washed up at Hornsea in November, another at Mablethorpe in July, a Bottle-nosed Dolphin at Maryport in August, and a Common Rorqual at Silloth in September. Dr. Harmer contributes many anatomical notes relating to the species described.

PREVIOUS RECORDS.

In our 'Notes and Comments' for February (p. 50) reference is made to the occurrence of a Cuvier's Whale (*Ziphius cavirostris*) from co. Clare, and a Rudolphi's Rorqual (*Balaenoptera borealis*) from the Scilly Isles. Dr. Harmer points out, however, that the specimen recorded as a Cuvier's Whale was not a *Ziphius*, as it is possible to show now that the skull has been cleaned, but proves to be True's Beaked Whale, *Mesoplodon mirus*, known solely from the original account of the type-specimen, which was obtained on the eastern coast of the United States in 1912. Evidence is given that the species which is thus added to the British list is further represented by a skeleton from the Galway Coast, which is preserved in the Museum of University College, Galway. The specimen recorded as a Rudolphi's Rorqual is now correctly determined as the Common Rorqual (*Balaenoptera physalus*).

BENEFICIAL BIRDS.

As 'Economic Series, No. 9,' the British Museum (Natural History) has issued 'Birds Beneficial to Agriculture,' by F. W. Frohawk,* The handbook contains an article on 'Birds and their relation to injurious Insects,' followed by 'Birds Beneficial to Agriculture.' It enumerates 44 species. The handbook is descriptive of a special exhibit in the Central Hall in the Natural History Museum. With regard to the above exhibit and the handbook, it must not be taken that the 44 species represented comprise all the beneficial birds in this country. The plates accompanying the memoir are from Mr. Frohawk's well known sketches.

THE VASCULUM.

A small loose printed slip inserted in *The Vasculum*, dated December, 1918, received by us on May 6th, apologises for the delay in issuing this particular number. It would be much more satisfactory if the date issued had been printed on

* 48 pages with 22 plates, 2s.

the cover or on the first page of the number. The publication is especially full of good things, including :—‘ The Dancers of the Torrent,’ by R. S. Bagnall ; ‘ The Harlequin Duck,’ by the late A. C. Chapman ; ‘ The Whiskered Bat,’ and Ornithological Miscellanea,’ by G. Bolam ; ‘ Borcovicus,’ by A. S. Dean ; ‘ Fish and Frog Showers,’ by H. S. Wallace ; ‘ The Flora of a North Tyne Farm,’ by Miss C. E. Measham ; ‘ Alfred Mearle Norman ’ (obituary notice) ; ‘ The History and Geography of the Bog Asphodels of the Genus *Narthecium*,’ by J. W. H. Harrison ; ‘ The Significance of Local Lists,’ by G. B. Walsh ; and local Notes and Records.

THE NATURALIST’S NOTE BOOK, NEW SERIES.

Referring to our note on page 161, Mr. E. G. Bayford informs us that the Barnsley Naturalists’ Society has three numbers of the new series of this journal, and that evidently at least four were published. There is nothing on the covers to show the date, but from information inside it is apparent that they were published in 1870. The first part of the new series contains 48 pp. + xvi. pp. of advertisements, and was issued in February, and the last part in the Society’s library is for May, and contains pages 145-192, with the same number of pages of advertisements. The publication measures $8\frac{3}{4}$ ins. by $5\frac{1}{2}$ ins. There seems to be no reference to this particular publication in the British Museum Catalogue of Periodical Literature, and any further information relating to it would be gladly received.

EDUCATIONAL GARDENING.*

Mr. Hogg has produced a clear and reliable guide on School gardening. The book deals in a practical manner with soils, their preparation and drainage. There are full details on the making of a garden, and a good series of cropping plans. The cultivation of vegetables, flowers and fruits, the application and use of manures and fertilisers, and common insect and fungoid pests and their treatment, receive adequate attention. Lists of well-selected questions call attention to the main plants to be observed and studied. Suggestive experiments are given on soils, the need for and use of special manures, also on germination, seed testing and values. Fruit growing is carefully treated and the varieties most suitable for cultivation are given. A chapter on winter handwork is full of practical hints on the making of necessary contrivances for the garden, which provide scope for handwork of a very useful kind. In the section on Bee-keeping, the construction of a hive is explained and very fully illustrated. In theory,

* By Robert Hogg, F.R.H.S. A. Brown & Sons. N.D. Pp. ix. + 159. 3/6 net.

gardening is a valuable aid in the training of the young, but in practice the fundamental lessons are often lost sight of ; this little book should help the teacher to make the best of his opportunity.

THE LIFE OF THE GRASSHOPPER.*

This is another of the valuable selections of essays from the *Souvenirs entomologiques*, and treats of Grasshoppers, Crickets, Locusts and of such insects as the Cicada or *Cigale*, the Mantis and the Cuckoo Spit, in fact, of all the orthopterous and homopterous insects discussed by Fabre. The life histories and habits of these insects are described in the author's inimitable manner—a combination of scientific accuracy, patient observation and record, and the charming naïveté, which makes his writings so attractive. The insects dealt with are lower in the scale than many of those of which Fabre has written such entrancing details, but the volume is none the less interesting on this account. Illustrations of the insects described would add much to the value of the book.

DISTRIBUTION OF MARSH RINGLET.

In *The Entomologist* for May, Mr. J. J. Lister, F.R.S., has some interesting notes on some North-Country Species and Forms of Lepidoptera. In his account of the distribution of the forms of the Marsh Ringlet, *Cænononympha tiphon*, he refers to Mr. Rowland-Brown's admirable study of this species, appearing in 'Études de Lepidoptérologie Comparée.' Three forms of *tiphon* occur in the British Isles, *philoxenus laidion*, and the type. *Philoxenus*, the 'British Southern Form' of Dr. Buckell, is found in the Lake District mosses, and extends southward to Delamere Forest in Cheshire and just over the northern borders of Shropshire and Staffordshire. *Laidion* is the 'British Northern Form,' extending from the Orkneys and Lewis and the extreme north of the mainland of Scotland to Perthshire on the east and as far as Loch Lomond on the west. The third and type form, the 'British Middle form,' occurs in Arran and the south-western counties of Scotland, across the Border country (Morpeth, Penrith, Carlisle), and down the moorlands on the east coast, through Durham and Yorkshire to Thorne Waste, north-east of Doncaster, and to the neighbourhood of Rotherham, thus extending almost as far south on the east-side of England as does *philoxenus* on the west side. It appears again in North Wales (Merioneth) and over nearly the whole of Ireland. The ocellation is intermediate between that of the two other forms.

* By J. Henri Fabre. Translated by Alexander Teixeira de Mattos. London: Hodder and Stoughton, 308 pages, 7s. 6d. net.

THE Y.N.U.

The war has caused great ravages and dislocation in every department of industrial, educational and social life, and we are again called upon to 'do our bit' towards the restoration of a normal course of life and work. In common with other institutions the Yorkshire Naturalists' Union has paid its toll, and many of its members and associates have made the great sacrifice. On the other hand, increased expenditure, especially in paper and printing, has so seriously burdened the Union that an effort must now be made to restore it to its pre-war level, both in membership and funds, so as to enable it to maintain, and if possible increase, its output of useful Natural History and Scientific work. We therefore appeal to all interested in the study of Natural History to aid our work by joining the Union, and the Secretaries would be glad to receive from our readers the names and addresses of any interested persons who might be induced to join the Union.

ICE TRANSPORT.

At a recent meeting of the Geological Society of London, Mr. F. Debenham read a paper on 'A new Theory of Transportation by Ice: the Raised Marine Muds of South Victoria Land (Antarctica).' A series of deposits of marine muds are found on the surface of floating 'land-ice' in the deep bays of Ross Sea (Antarctica). Similar deposits are also found on land up to a height of 200 feet, in some cases on old ice, in other cases on moraine. The deposits are briefly described, and former theories concerning them are discussed. A new theory is put forward, prefaced by an account of the nature of the typical ice-sheet which bears them. The upper surface of the sheet is known to suffer a net annual decrease, and evidence is given to show that the lower surface has a net increase by freezing from below. The theory is that the sheet will freeze to the bottom in severe seasons, and enclose portions of the sea floor. Owing to the method of growth of the sheet by increments from below, the enclosed portions will ultimately appear on the surface, thus being raised vertically as well as translated horizontally. The application of the theory to other localities is briefly sketched, with especial reference to the shelly moraines of Spitsbergen and the shelly drifts of the glacial deposits of Great Britain. The general results of such a method of transportation are shown to be the raising of marine deposits above their initial level, the preservation of the organisms, the deposition of small patches of muds with ordinary supra-glacial moraine, and the collection of remains of fauna from different depths in one horizon.

YORKSHIRE SHELLY DRIFT.

The President, Mr. G. W. Lamplugh, said the paper was of peculiar interest in bringing out clearly the extensive scale

on which marine material could be taken up from the sea-floor into an ice-sheet. Such material would afterwards necessarily be transported as far as the ice travelled. In the shelly drifts of the Yorkshire coast it was evident that the material of the sea-floor had in some cases been detached and transported in strips and slabs, and the speaker had surmised the possibility of 'anchor-ice' as an agent, but had been unable to find evidence that 'anchor-ice' was formed in sea-water. The idea that a floating glacier might receive continuous additions from below by the freezing of the sea-water at considerable depths was new to him, as he had been accustomed to suppose that the limit of downward freezing under such conditions was soon reached. But, if the author was right in this respect, his theory offered a simple explanation of the known facts.

A WELL-ARMED GLACIALIST.

Prof. P. F. Kendall said that glacial geologists would be thankful to the author for furnishing their armoury with a new weapon. It was over forty years since the suggestion was made that the occurrence of marine shells in glacial deposits could be explained without recourse to a marine submergence. Three ways had been indicated by which remains of marine organisms could be uplifted by ice, and the author had added a fourth. Garwood and Gregory had found in Spitsbergen that the Ivory Glacier, in passing over an upraised sea-floor, had incorporated in its lower layers shells and other objects which, farther down the valley, come out on the surface of the glacier at an altitude of probably 200 feet or more above their place of origin. They attributed this to the lessened mobility of the *débris*-laden basal layers of the ice, which would offer resistance to the flow and cause the development of a shear that would bring the shells out on the surface of the glacier. The case of the Sefström Glacier, described by the President in a paper to the Yorkshire Geological Society, seemed to the speaker to indicate the upthrust of subaqueous moraine by the nose of the glacier.

ANCHOR ICE.

A third method of uplift mentioned by the President was by the formation of anchor-ice. This, the speaker understood, was a common occurrence in the Baltic, and fishermen, when far from land, on the approach of winter, watched carefully for the appearance of cakes of ice rising from the bottom to give them warning of the imminence of a general freezing of the sea. Sometimes the warning came too late, and the boats were frozen in and had to remain until liberated by the spring thaw. The author's interesting communication indicated yet another way in which uplift might be effected. It is not clear how much of the shelly drift of the North of England

can be accounted for by each of these explanations. In the Irish-Sea basin, where shells are found up to altitudes of 1200 and 1400 feet, it is significant that, as R. D. Darbishire pointed out, the same suite of shells is found at the highest elevations as in the low grounds; moreover, the fauna is essentially a shallow-water one, and the grouping characteristic of 200 fathoms is nowhere to be found. Again, the shells are of various ages, many of them of Pliocene types, and they often bear striations due to ice-action. A few small patches like those found by the speaker in the Drift of the Isle of Man and by the President at Flamborough Head appear to be true fragments of contemporaneous sea-bottom.

ANOTHER MUSEUM FOR HULL.

We learn from *The Museums Journal* that 'The Hull Corporation Property Committee have adopted a recommendation by the Museums Sub-Committee that the Trustees of the old Grammar School building be informed that the Corporation will be willing to take over and preserve the building as an object of antiquarian interest, and to utilize it for museum purposes so long as it may be practicable to do so. With some slight alterations the building could be admirably adapted to suit the purpose of the Museums Committee. There is a large well-lighted room on the ground floor, and upstairs a number of smaller rooms which could easily be modified for exhibition purposes by a number of partitions being reduced. For some considerable time, collections have been made (which are at present temporarily shown at the three museums, or are in store) to illustrate what has been done in Hull and district in connection with the Great War. Towards this, complete series of various objects manufactured (some showing the different processes) have been presented by various Hull firms; also larger specimens of considerable value have been presented by the manufacturers in Bradford and Leeds, in addition to which are several interesting relics handed over by the military authorities. There is also an extensive collection of Zeppelin bombs, badges, medals, posters, aeroplane photographs, war stamps, etc., which, together with the valuable collection of trophies from the Local War Museums Committee, will quite fill the large room on the ground floor, and form an appropriate and valuable war memorial in a suitable quarter of the city. With regard to the upper rooms, the curator has for many years been gathering together a collection of 'by-gones' relating to the more recent history of the arts and crafts and households of this area. Such exhibitions as these are very popular on the continent, and the valuable series now in store at Albion Street will enable Hull to take its place in illustrating the folk-lore of the country.

THE JEW'S EAR FUNGUS

(*Hirneola auricula-judæ*, Fr.).

WALTER JOHNSON, F.G.S.

At any exhibition of natural objects the curious-looking fungus known as the Jew's ear, or Jews' ears, is certain to

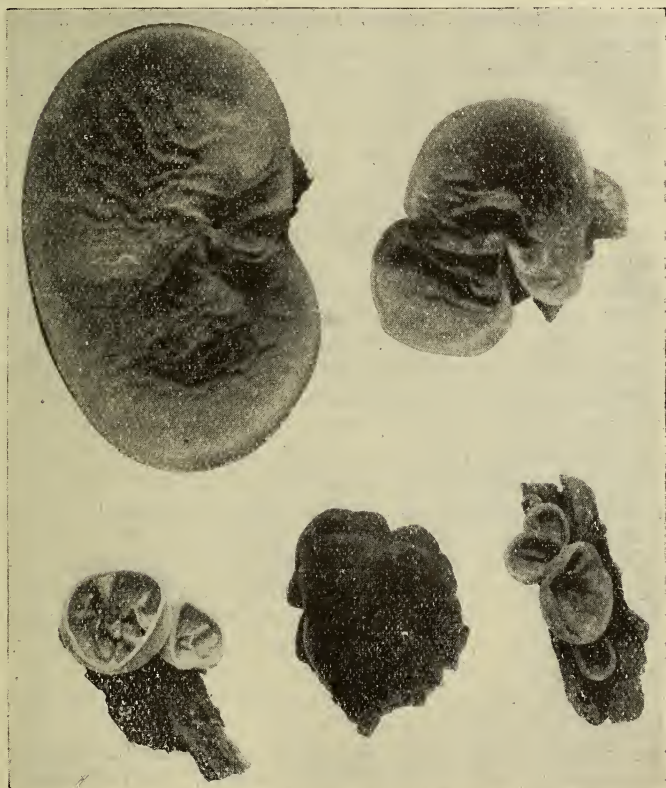


Photo by]

[Jesse Packham

Specimens of Jew's Ear, from elder, showing various stages of development.

The middle specimen in the lower row has the under side exposed.

attract keen attention and to provoke a series of questions which are not always easy to answer. The odd, outlandish name, the physical properties and general ecology of the fungus, its extraordinary shape and varied hue, not to speak of the associated folk-lore, all excite the interest of the beholder.

When, in order to satisfy the inquiring visitors, we begin

to extend our own search, we find, as is not infrequently the case, that the authorities, while agreeing in the main, are not in complete accord concerning some of the desired details. The discrepancies are partly due to the protean forms and chameleonic colours, which the Jew's ear assumes in response to atmospheric and seasonal changes, but partly also to the too ready acceptance by successive writers, of statements made by their predecessors. Other differences are the results of the lack of definite observations, and one purpose of this paper is to indicate where future investigations would be useful.

The Jew's ear belongs to the family Tremellaceæ of the sub-order Hymenomycetes, or, to put the matter both briefly and generally, to a family, the members of which have a smooth, and more or less gelatinous hymenium, or spore-bearing surface, and to a sub-order in which the hymenium is fully exposed to the air, if not from the first, at least before the spores are mature. A few words will be said in a subsequent paragraph respecting the use of the word 'spore.' The sub-order Hymenomycetes, and that of the Gasteromycetes, together make up the grand Order known as the Basidiomycetes, all the species of which produce 'spores' outside a peg-like cell, or basidium. But the family Tremellaceæ is not quite normal in this respect, as will be seen later.

I.—FORM AND COLOUR. The popular name was obviously given because the fungus sometimes resembles a human ear. The likeness, however, is traceable only in mature specimens, and even then much more rarely than is commonly supposed. The younger specimens take the form of a shallow cup or saucer, the margins of which are elliptical rather than circular. At a more advanced stage, the fungus, while retaining its concave upper surface, is no longer discoid, its margins becoming irregular, and its thickness diminishing until, when moist, it easily quivers on being touched. Meanwhile, the whole surface, but especially the superior portion, has become folded or corrugated into a series of raised and wrinkled veins. These veins are often described as branching or anastomosing, but this is not quite exact. In old specimens, indeed, the plications branch from the middle part of the fungus, but yet, even in these cases the convolutions are in part disconnected. Mr. Massee's description, 'variously plicate,' seems both apt and true.* The matter is not very important, because the result is the same—the development of a greater reproductive area.

Some writers are disposed to term the Jew's ear sessile ;

* 'Brit. Fungus-Flora,' 1892, I., p. 58

perhaps it would be more accurate to say that it is attached to the host tree—usually an elder—by a very short stalk, the narrow base of which is placed eccentrically. Now and then one encounters a specimen which has a decided stem, perhaps half an inch in length.

The colour of *Hirneola* varies with its age and the state of the atmosphere. At once it should be explained that, when dry, the fungus is rigid, horny, and moderately brittle. Let it be moistened, however, and the substance of the 'ear' soon becomes soft, gelatinous, and as pliable as india-rubber. Touch the thin tremulous margins, and the resemblance to the cartilage of the ear will be apparent. Hold the fungus to the light and it is seen to be faintly translucent. These little experiments, which so much please the visitor at a conversazione, may be repeated again and again. It has been asserted that if warm water be used, the Jew's ear will not be absorbent a second time, but this is incorrect, for several immersions in fairly hot water do not destroy the absorbent property.

A young *Hirneola* generally has a uniformly dull, grey-olive tint, but at a later period this changes to brownish flesh colour, with traces of pink and green. With the absorption of moisture the variations of hue become intensified, and the whole fungus seems to have a velvety bloom, such as is seen on a ripe black plum. In old age, the beautiful tints shade off into a sooty-black.

The upper or fertile surface of the Jew's ear is covered with a smooth integument, while the ridges and areas near the margin might even be termed polished. The term 'smooth,' it should be explained, technically denotes the absence of hairiness or woolliness, and a 'smooth' surface may be even or uneven. Perhaps the best description of the under or barren surface is 'minutely velvety,' for it has a coating of delicate down, curiously suggestive of the skin of a mouse. Hence the term "tomentose," often applied, is not inaccurate, but 'strigose,' which is also used by certain writers, is misleading, although a rampart of short, closely-packed hairs may frequently be seen on the borders.

It has been noticed that, if the Jew's ear be soaked in water for a considerable time—I have found that about a fortnight is required—the lining of the cup may be separated from the underlying cavity, or excipulum.* In a natural state, *Hirneola* seems to shrink and decay as a whole, and its blackened surface is sometimes attacked by a parasitic mould.

II.—REPRODUCTION. A reservation has already been made with respect to the term 'spore.' As is the case with

* J. Stevenson, 'Brit. Fungi,' 1886, II., p. 315

the other Basidiomycetes, the reproduction of *Hirneola* is asexual, and since a spore is strictly the product of an act of fertilization, it is better to speak of the reproductive bodies as conidia, or at least, to remember that 'spore' is used conventionally. In the typical basidiomycete, as for example, in the common mushroom, the conidia are borne on short, stout pegs or pedestals, known as the basidia.

After a period of dampness, combined with warmth, a mass of hyphæ springs from the cavity of *Hirneola*, and basidia are formed directly from these. The basidia then become constricted laterally into a number of cells, each of which contains a single sausage-shaped conidium, when the hyphæ are first protruded the fungus looks as if it had been powdered with white dust.

I have not personally witnessed the dispersion of the conidia, nor have I been able to get them to germinate successfully on selected pieces of decaying timber of various kinds. Left to themselves, however, all went well. Where there were jagged edges on a newly-broken branch of rotting wood, these soon become dotted with minute pin-head bodies, delicately hoary, and suggestive of the chalcedonic concretions which line the interior of hollow flints. These minute bodies soon began to increase in size, and a depression was formed in each, until the young fungus resembled nothing so much as a tiny sea anemone with its tentacles withdrawn.

Throughout the winter successive growths of Jew's ear were started. A few sharp frosts would kill some of the older fungi, but others, chiefly young ones, seemed to survive without much hurt. Some specimens, again, which appeared to have been killed outright, were not really dead, but regained their original appearance when once more moistened. What are the limits of this endurance of frost? Plainly, much wider than those of the mushroom types of fungi.

It was rather curious that a branch of elm which did not respond kindly to the cultivation of *Hirneola*, was afterwards found to be well-coated with specimens of *Exidia alba*, so that Nature found an easy means of approach for suitable species where man failed with another kind.

III.—HOST TREES. Text-books, in general, agree in asserting that *Hirneola* grows on elder and elm trees. Some authorities extend the statement thus, 'on old trunks, especially elder and elm,'* or they even add a vague, but comprehensive 'etc.' One wonders how many records exist to justify these assertions. In reality, the occurrence of *Hirneola* on any tree but the elder must be deemed uncommon, and on any

* W. G. Smith, 'Guide to Sowerby's Models of Brit. Fungi,' (Brit. Mus.), 1893, p. 62

tree besides the elder and elm, a rare and noteworthy phenomenon. Fries, indeed, states that the fungus grows '*Ad truncos Sambucinos, vix alios*,'* and again, '*in truncis Sambuci, raro aliis*,'†—sufficient admissions of the rarity of other host trees.

In 1911, I discovered Jew's ears growing on an elm, recently cut down, at Middleton, near Bognor. On a second visit, in 1918, the tree, as might have been expected, was found to have been removed, but further search was made for similar associations. Many elders, well loaded with *Hirneola*, were soon encountered, but although elm trees also were common in the neighbourhood, not a single Jew's ear could be detected on any of these.

Several years ago, Mr. W. J. Maxton, of Richmond, informed me that he had seen *Hirneola* on an elm in Richmond Park, and another botanical friend, Mr. C. E. Britton, more recently made a like record in Spanker's Hill Wood, a plantation situated in the same royal domain. I took every opportunity, therefore, to visit the spot repeatedly. The elders in the plantation are not of great age, but some of them are liberally studded with Jew's ears. On the decaying branches of a few elms, which are near at hand, and which were planted about ninety years ago, there was also a good show of specimens. Contrariwise, this indifference to habitat is markedly absent at Wimbledon Common, about a mile and a half distant. There, one may observe two remarkable cases, in one of which a hawthorn, and in the other a thriving shrub of dogwood (*Cornus*), is closely intertwined with an elder, so intimately, indeed, that it required careful examination to separate or discriminate the two species, yet not a single Jew's ear had transgressed from the parent elder. Here there was no doubt which tree was the favourite, nor, assuming, as I think from observed facts, we are bound to assume, that *Hirneola* does not necessarily require a dead host, were there lacking suitable areas for attack on the hawthorn and dogwood which twined with the elders.

There exists one striking record of the discovery of *Hirneola* growing on the barberry, a record which is especially valuable because it is undeniably sound. When the Yorkshire Naturalists' Union visited Boynton, near Bridlington, in 1912, the Botanical Section observed, at the gate of the village churchyard, a tall bush of barberry, free from micro-fungi, but bearing specimens of *Hirneola*.‡

A far more curious record has been published, but it must

* E. Fries, 'Systema Mycologicum,' 1823, II., p. 222.

† 'Hymenomycetes Europei,' 1834, p. 695

‡ *Naturalist*, 1912, p. 212

be quoted with reserve, since it is probably faulty owing to the mode of expression employed by the Recorder. In 1894, the late John Farrah wrote thus to *The Naturalist*: '*Hirneola auricula-judae*—"Jew's Ears" and *Morchella esculenta*—the "Morell," were fairly abundant on a sandy portion of the south bank of the Nidd, at Killinghall Bridge, during the early part of May.* The competency of Mr. Farrah as an observer is, I believe, beyond question, else one might suppose that some species of *Peziza* had been mistaken for *Hirneola*. The difficulty is probably a capital illustration of striving to be brief and becoming obscure, as the Horatian phrase has it. If that be so, the note would mean that *Morchella* was fairly abundant on a sandy bank, as was also *Hirneola* on [? an elder] growing on the same bank.†

One has often paused to reflect on the strong predilection which *Hirneola* displays for the elder. This preference is doubtless based on some physico-chemical condition which may never be quite understood. As well might we ask why the beef-steak fungus, (*Fistulina hepatica*) is found almost solely on the oak. Why does *Viola hirta* love the chalk downs, or *Erica* the hungry moorland, or *Beta maritima* the sea-coast? And so on, throughout the whole realm of animated nature. These, as Lord Avebury used to say, are 'the things we don't know.'

As a plain fact, we have seen that the Jew's ear can exist as a parasite on the barberry, and I once found, in Richmond Park, *Fistulina* growing on an ash. A distinguished botanist to whom these oddities were mentioned, laconically remarked, 'Why not?' That would seem to be the accepted philosophy of the matter, and these very exceptions, while indeed rendering the problem more complex, illustrate a favourite maxim of the present writer: 'Plants grow where they can, not where they would.' This, however, does not close the discussion.‡

(*To be continued*).

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Coleoptera Illustrata, Vol. I., No. 4, Carabidae, by Howard Notman. Brooklyn, N.Y.: 136 Joralemon Street. Plates I. to XLIX. Price one dollar. This part concludes Vol. I., index to which is issued with it. The line drawings are of the same excellence as in the previous three parts, and illustrate members of the genera *Omophron*, *Notiophilus*, *Dyschirius*, *Laemostenus*, *Sphodrus*, *Calathus*, *Dolichus*, *Anchomenus*, *Pterostichus*, *Lebia*, etc.

* *Naturalist*, 1894, p. 211

† There is little doubt that Farrah means to refer to the fact that the sandy bank yields the two species, leaving it to be assumed that elder grew thereon.

‡ For instance, how can we tell plants would'nt grow where they must?—[ED.]

MORE SONGS OF THE BIRDS.

WALTER GARSTANG, M.A., D.SC.
Professor of Zoology in the University of Leeds.

THESE additional songs, two of them in an abbreviated form, have already appeared in the *Yorkshire Weekly Post* during the past month. They are now presented in complete and revised form.

Some of my readers have experienced difficulty in getting hold of the swing of the Redstart's 'Ode.' If they will note the metre of my rendering of the bird's own phrase (stanza 3, line 2)—

$\frac{1}{-} - \mid \frac{1}{-} - \parallel \frac{1}{-} \parallel \text{—} \text{—} \frac{1}{-} \mid \text{—} \text{—} \frac{1}{-} \mid$

they will find that each of the first three stanzas begins with a similar line (strikingly Alcæic in spite of the differences), and that the words and breaks have been adjusted to indicate the rhythm as naturally as possible. The last three stanzas have been freely smoothed to English measures.

VII.—The Redstart's Ode.

Shall we wait now? Ah! do you see on the rail
 Yon sprightly bird? There—with the flickering tail!
 He turns! Just note that lovely head!
 He is off! Mark the flash of his tail dull red!

Handsome Redster! Soon will he sing and you'll hear
 His music wild,—short, unmistakable, clear:—
 Some opening notes, a brazen shriek,
 Then a swift double flourish quite unique.

Back he comes! Now hark! over here, in the tree:
Wée-jee! Jée-jee! WÍZZ! Did-ju-ée! Did-ju-ée!
 With wanton notes oft added on,—
 For he's nightingale, robin and chat in one!

Gay troubadour, thanks! The romances you tell
 In metre so quaint admiration compel!
 But just this point I fain would clinch:
 Are you finch playing warbler? or warbler, finch?

Your strain with its touch of Alcæus's lyre,
 Its challenging notes and its climax of fire,
 Was surely learnt in Lesbian climes
 Far away from a land where the Muse needs rhymes !

Or did you from Horace derive your neat ode
 When haunting the groves of his Sabine abode ?
 Hear Tyndaris Teian ballads sing
 By Digentia's stream or Bandusia's spring ?

VIII.—The Whitethroat's Dancing Song.

Watch this artful Whitethroat prancing
 Just in front with wing-steps light,
 Fancy rings of music dancing
 'Long the hedge with May-bloom white ;

Creeping through the thicket, cheeping
 With alarm when we delay ;
 Heaping melodies and leaping
 Loops of joy when on we stray ;

Till triumphantly he utters
 Something very like a scoff,
 Almost in our faces flutters,
 Clears the hedge and then is off !

Zée-o, Chéechey, Wóochey, Wéechey
 (Quick now ! Quick as you can be !)
Wée-zo, Choo-éechey, Choo-éezo, Choo-éechey,
Zeécheo, Wéecheo, Zéeo-choo-ée !

Beating back to take a greeting
 To his mate upon her nest :
 ' Meeting fleeting ! They're retreating !
 All goes well ! Had such a jest ! '

Now he freely gambols, skipping
 High on light fantastic wings ;
 Tripping two steps, one step dipping,
 See ! right o'er yon tree he sings !

IX.—The Jewel Song of the Garden Warbler.

A song of rich jewels all linked in a chain
And freely in sunshine displayed ;
Soft lilt of pure melody,—pearls for a strain
Low-warbled in orchard and glade !

But none of these gems in its beauty conceals
Dark stories of greed and of strife :
As his cadences flow the grey minstrel reveals
Just the joys of a sweet simple life.

Would you hear him ? Then come where this grass is so lush—
Put everything else from your mind ;—
You shall hear his low gush of rare music,—Oh, hush !—
Near the top of that willow behind !

(*Allegro ma non troppo ; dolce ; legato.*)

Joo-riddy, joo-réedy, joo-riddy, joo-áy
—Zo ; Wáyzo, Wáyzo, Diddy-deróo ;
Joo-ée-o, Joo-áy-diddy, Dróo-ey, Droo-áy
—Do ; Wée-jeroo, Wée-jeroo, Jóo !

(*Da capo.*)

So babble clear waters that break from a rill
Upon moss-covered boulders in spray ;
So tinkle light pearls, that a casket may fill,
When poured on a velvet-lined tray ;

Like the low lullaby that a mother knows how
To croon o'er the babe at her breast ;
Like the ripple of wavelets that welcome the prow
Of a bark sailing home to its rest.

Singing Wayjo, Wayjo, Wayjo,
Diddy, Teroo, Teroo ;
Wayjo, Wayjo, Wayjo,
Jirra, Jerooble-oo !

THE BRISTLY MILLIPEDE IN NORTH Lincs.

T. STAINFORTH, B.A., B.SC.

ON the occasion of the excursion of the Hull Scientific and Field Naturalists' Club to Barton-on-Humber, on May 10th, I was pleased to find the Bristly Millepede, or Pencil Tail (*Polyxenus lagurus*), occurring in some abundance. The habitat, namely, the squared beams forming a very low parapet to the culverts that cross the ditches in Dam Road not far from the Humber shore, was somewhat unexpected. Not only was the habitat quite different from that in which I had previously found the species in East Yorkshire (see *The Naturalist*, 1916, p. 181, where an illustration is given), but the nature of the subsoil was also different. At Brantingham, they lived on the side of a steep chalk wold, while at Barton the ground consists of Humber silt, and is very low and flat. They occurred on the ends and sides of the beams in small groups and when disturbed, glided rapidly and gracefully into cracks in the wood. Some were quite openly exposed on the sides of the beams overlooking the ditch, while others were hidden behind tufts of grass growing from the ground on the inner sides and ends. The beams were covered with dried *Protococcus* or an incipient grey lichenous growth. I searched the loose bark on some hawthorn bushes near but without success, and a careful search under willow bark at Blow Wells a short distance away brought about a similar result. I visited the locality again on June 15th, and found them occurring on the same beam equally as commonly as on the first occasion.

I kept some alive for a week or so on pieces of rotten timber, but they did not take kindly to confinement and gradually died off. To anyone in search of a delightful living object to exhibit under the low powers of the microscope I can strongly recommend this graceful little creature, and this may perhaps afford a incentive towards the discovery of the species in other localities. Not only are the tufts of scales on the sides of the body and especially those on the terminal segment very striking, but the coloration of the living creature is also decidedly effective, a character which cannot be seen in the usual mounted examples. It glides rapidly about and is able to walk with ease on the undersurface of a sheet of glass.

As far as records at my disposal show, it has not been noted in Lincolnshire before. The late W. D. Roebuck writes in his 'Presidential Address to the Lincolnshire Naturalists' Union, 1910,' (Lincs. N.U. Trans. 1910, p. 169), 'of the Myriopoda we appear only to have one single note, one by Mr. F. M. Burton of *Scolopendra electrica* in 1851 at Lincoln.' I cannot find that any further records of Millipedes or Centipedes have been made since 1910.

THE SPIDERS OF YORKSHIRE.

WM. FALCONER,
Slaithwaite, Huddersfield

(Continued from page 140).

Tapinocyba subitanea Camb.

Usually plentiful among hay and straw refuse in barns, stables, etc.; less common in the open and occasionally in cellars; noted for Dorset, London, Kent, Sussex, Cheshire, Cambs., Staffs., N. Wales, Lancashire, Northumberland, Cumberland and Edinburgh; abroad, France and Switzerland. *Adult* summer onwards to winter. First occurrence—the author, Rillington, August, 1906. Probably a common species in the county in barns and stables, in which I have never failed to find many examples.

V.C. 61.—Burton Constable, one ♂, and Hull, in a cellar, one ♀, Cold Harbour Lane (Hull), one ♀, T. S.; Rillington, numerous.

V.C. 62.—Redcar, on rubbish heap, east of promenade, one ♂, several ♀s.

V.C. 63.—Hurst Wood (Shipley), one ♀, W. P. W.; Wilberlee and Broad Oak, in barns, numerous; Almondbury (Huddersfield), one ♀, cellar, numerous in stables; Farnley Tyas, stable refuse thrown into a quarry, both sexes, numerous.

V.C. 64.—Howden, one ♀, under bracken, W. P. W.

T. pallens Camb.

On record for Lanarkshire, Pentland Hills and Rothiemurchus; Northumberland, Staffordshire and Cheshire; Isle of Man; abroad, Sweden, France and Central Europe; like the last absent from Irish list; at the roots of grass, and amongst fallen leaves and moss in woods. *Adult* autumn to spring. First occurrence—the author, Almondbury, April, 1899.

V.C. 61.—Houghton Woods, both sexes, Holme-on-Spalding Moor, ♀s, T. S.; Riccall Common, both sexes, T. S., W. F.

V.C. 62.—Wilton Wood, Normanby Intake Plantation, Bilsdale Head, Eston Moor, common, J. W. H.; Ringingkeld Bog, R. A. T.; Lazenby, two ♀s; Raincliff Woods, ♀s.

V.C. 63.—Woods about Shipley and Cottingley, W. P. W.; Crimsworth Dene, W. P. W., W. F.; woods, and in many of them plentiful, about Slaithwaite, Marsden, Meltham, Honley, Huddersfield, Storthes Hall, Almondbury and Stockmoor; Hardcastle Craggs; Hebden Bridge; Coxley Valley; Deffer Wood.

V.C. 64.—Howden Ghyll, W. P. W.; Sawley High Moor, S. M., W. F.; Grassington; Harewood Park; Rigton; Roundhay Park, Leeds; Meanwood; King Wood and Adel Moor.

T. insecta L. Koch.

A rare British spider, first taken in Northumberland, October, 1903, then in Yorkshire, April, 1904, and more recently at Bexhill in Sussex, and in Ireland (Co. Carlow); abroad, France and the three Central European countries. First occurrence—the author, Roundhay Park, April, 1904.

V.C. 63.—Honley Old Wood, near Huddersfield, one ♀ among leaves, September, 1907.

V.C. 64.—Roundhay Park, Leeds, an adult male from heap of accumulated dead leaves in the old quarry behind the artificial ruins; Spa Gill, near Stephenson Bridge, Grantley, one ♀ amongst fallen leaves, May, 1915.

Gen. *Metopobactrus* Sim., 1-1.

M. prominulus Camb. (*Microneta territa* Camb. ♀).

Uncommon, reported from Dorset, Sussex, Kent, Glamorgan, Staffs., Notts., Cheshire, Northumberland and Scotland, but very

widely distributed on the Continent; amongst moss and the roots of grass. *Adult*. ♂ May to July; ♀, until autumn. First occurrence—the author, Wessenden Valley, June 1901.

V.C. 61.—Sutton Drain Bank, one ♀, T. S.

V.C. 62.—Staithes, J. W. H.; Scarborough, one ♀, R. A. T.; Cayton Bay, three ♀s; Kilton Wood, one ♀.

V.C. 63.—Both sexes at the following places;—Above Mont Sarah's, Scammonden; Bottoms Wood (Slaithwaite); Wessenden Valley; most frequent about Standedge and Pule in dampish places; Woodsome; Honley Old Wood; Morton Wood, Holmfirth; Dunford Bridge; Deffer Wood; Askern.

V.C. 64.—Ilkley, W. R. B.; Goredale, ♀, W. P. W.; Hackfall, five ♀s; both sexes at Bishop Wood; Adel Moor; Bolton Woods.

Gen. *Pocadicnemis* Sim., 1-1.

P. pumila Bl. (*Susarion neglectum* Camb. ♀).

Abundant and widely dispersed in Gt. Britain and fairly so on the Continent; recently found in Ireland; amongst grass and low vegetation. *Adult*—♂, May to July; ♀s until autumn. First occurrence—the author, Slaithwaite, May, 1901. Widely distributed in Yorkshire, having been noted for every locality investigated, and in many of them abundantly.

Gen. *Eboria Falcr.*, 1-1.

E. caliginosa Falcr.

The only other locality for this very rare spider is Scafell Pike, at an elevation of 1,500 feet, 1♂, April, 1911, an example which I have seen. For description and figures see *The Naturalist*, 1910, February, pp. 83-88, and July, pp. 253-4.

V.C. 63.—Clowes Moor, Marsden, in swamp, on right hand side of the Old Packhorse Road to Rochdale, one ♂, one ♀, May 15th, 1909; at other times two ♂s and ten ♀s, at roots of rushes growing up through sphagnum, elevation 1,000 ft.; above Nont Sarah's, on right hand side of road immediately below the footpath to Cupwith Reservoir, a few of each sex, June, 1911.

Gen. *Entelecara* Sim., 4-7.

E. acuminata Wid.

Only one other northern record for this spider: 'near Carlisle, a few adult males,' F. O. P. Cambridge; but widely distributed and not uncommon in the south of England; not on Irish list. *Adult* May to July. First occurrence—the author, Askern, June, 1908.

V.C. 61.—Deepdale Woods (Beverley), three ♀s, Houghton Woods (Market Weighton), one ♂, several ♀s, T.S.; Riccall Common, three ♂s, two ♀s.

V.C. 62.—Hinderwell, several ♀s, J.W.H.

V.C. 63.—Between Askern and Owston, two ♂s, one ♀, among reeds in a dried-up ditch.

V.C. 64.—Bishop Wood (Selby), two ♂s, three ♀s, T. S.

E. erythropus Westr.

Recorded for many localities from Dorset to Inverness, Ulster, and the countries of N. and Central Europe; on vegetation, the foliage of trees and bushes, among vegetable debris on the ground and occasionally under stones. *Adult* May and June. First occurrence—the author, Slaithwaite, June, 1898.

V.C. 61.—Bridlington, H. C. D.; Snake Hall, Inglemire Lane and Pickering Park (Hull), Kelsey Hill, Meaux, Burton Constable, ♀s, T.S.; Riccall and Skipwith Commons.

V.C. 62.—Scarborough, H.C.D.; Scarborough Mere; Ravenscar; Boulby; Kilton Woods; Riftswood (Saltburn).

V.C. 63.—Askern; many localities about Bradford, Bingley and Shipley, Huddersfield, Hebden Bridge, but not in any numbers, W. P. W., W. F.

V.C. 64.—Howden Ghyll, Elam Wood (Keighley), W. P. W.; Wharfedale, from Bolton Woods to Tadcaster; Kettlewell, Ingleton, Menston, Hackfall, Sawley, Adel, Brandon, Bishop Wood.

V.C. 65.—Tanfield.

E. trifrons Camb.

Uncommon and local, on record for Dorset, Northants., Staffs., Lincs., Norfolk, Wicken Fen, Cumberland, Northumberland, Loch Shiel, Midlothian, Leinster and Ulster; abroad, N. France, Belgium and Kamtschatka. *Adult* April to June. First occurrence—the author, Malham, June, 1910.

V.C. 61.—Spurn, one adult male and a few immature females, 1913.

V.C. 64.—Spa Gill Wood, Sawley, S. M., one adult male, 1915; Malham, swampy ground in enclosed part of the Tarn, one ♂, two ♀s.

E. thorellii Westr.

Rare, reported from Southport, one ♂, Leinster, one ♂, one ♀; Bavelaw Moss (Edinburgh), one ♂; Northumberland, few; Penrith; Cleethorpes, one ♀ (*vide The Naturalist*, August, 1911); abroad, Sweden, France and Bavaria. *Adult* May and June. First occurrence—Eston., J. W. H. Harrison.

V.C. 61.—Riccall Common, one ♂, one ♀, T. S., May, 1912.

V.C. 62.—Eston, one ♀, J. W. H. (*teste* Rev. J. E. Hull); Langdale End, near Scarborough, one ♂, June, 1913. R.A.T.

Gen. *Styloctetor* Sim., 1-3.

S. penicillatus Westr.

On record for Dorset, Hants., Essex, Cambs., Staffs., Cheshire, Northumberland, Cumberland and Rannoch (Scotland), and not common; in the cracks of tree bark; abroad, Sweden, France and Central Europe. *Adult* ♂, June and July; ♀s until autumn. First occurrence—the author, Mollicar Woods, September, 1907.

V.C. 61.—Snake Hall, N. Cave, Birkhill Wood (Cottingham), Rudston, a female at each place, T. S.

V.C. 62.—Middlesbrough, J. W. H.

V.C. 63.—Harden, one ♂, one ♀, W. P. W.; Y.N.U. Cawthorn, Deffer Wood, on sycamores, W. P. W., W. F.; Mollicar Woods (Huddersfield), oaks, five ♀s; Storthes Hall Wood, two ♀s.

V.C. 64.—Grassington, one ♀, Harewood Park, two ♀s, W. P. W.; Bishop Wood, one ♂; Birkham Wood (Knaresborough), two ♂s.

Gen. *Dicymbium* Menge, 2-2.

D. nigrum B.

Widely distributed in Great Britain as far north as Aberdeen and St. Kilda, and in Ireland; abroad, Sweden, Belgium, France and Central Europe; roots of grass and heather, fallen leaves and moss. *Adult* throughout the year. First occurrence—the author, Dean Head, September, 1900.

V.C. 61.—Skipwith Common, Weedley, Waudby Green, Park Avenue (Hull), Humber Bank East, Marfleet Drain, Bielsbeck, Flamborough Head, T. S.; Humber Bank West, Welton, Pulfin Bog and Bentley Woods (Beverley), E. A. P.; banks of river above Selby, W. P. W., W. F.

V.C. 62.—Eston, Redcar, Bilsdale Head, Farndale, Greenhow Botton, Turkey Nab, J. W. H.; Cayton Lane and Raincliff Woods, R. A. T.; Scarborough; Ringingkeld Bog; Marske.

V.C. 63.—Calverley, S. M.; Moorhead (Shipley), W. P. W.; Y.N.U. Deffer Wood; Lane, Windsor Castle, Merridale, Ainley Place,

Wilberlee and Royal Clough, near Slaithwaite; Dean Head; Drop Clough and Wessenden Valley, near Marsden; Crosland Moor (Huddersfield).

- V.C. 64.—Saltaire, W. P. W.; Bishop Wood; Roundhay Park (Leeds), Brandon, Alwoodley; Grimbold's Crag and Birkham Wood (Knaresborough); Hackfall.

D. tibiale Bl.

More restricted in distribution and of more northern and western range in the British Isles than the last; on record for Devon, Warwickshire, Glamorgan, N. Wales, Cheshire, Staffs., Cumberland, Northumberland and Berwick; Donegal County in Ireland; abroad, Sweden, France and Central Europe; usually in damp places in woods. The females of the two species are indistinguishable. *Adult* throughout the year. First occurrence—the author, Dean Head, September, 1900.

- V.C. 61.—Weedley Springs (S. Cave), ♂, T. S.

- V.C. 62.—Eston, Farndale, Turkey Nab, J. W. H.; Aireyholme Wood (Ayton), W. P. W.; Ringingkeld Bog, R. A. T.; Lazenby.

- V.C. 63.—Cottingley Wood, Harden and Old Spring Wood (Shipley), W. P. W.; Hebden Bridge and Crimsworth Dene; much commoner in woods about Slaithwaite, Marsden, Saddleworth, Meltham, Stocksmoor, Honley, Holmfirth and Huddersfield than the preceding species; Coxley Valley; Deffer Wood; Dunford Bridge.

- V.C. 64.—Bishop Wood, T. S.; King Wood (Adel); Bolton Woods; Ingleborough, near the summit; Malham; Stubbing Moor.

- V.C. 65.—Y.N.U. Upper Teesdale.

(*To be continued*).

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We have received the *Report of the Marlborough College Natural History Society* for the year ending 1918. It contains some very useful records in various branches of natural history, as well as meteorological observations.

The New Phytologist, Vol. XVIII., Nos. 3 and 4, for March and April, 1919, published May 14th, 1919 [why not Vol. XVIII, No. 3?], includes the following items: 'Origin of the Compositæ,' by James Small; a contribution to the Life History and Cytology of *Synchytrium endobioticum* Schilb. Percival; the cause of Potato Wart Disease, by K. M. Curtis; On the Retention of Vitality by Algae from old stored Soils, by B. Muriel Bristol.

We have received the *Flora of the Northern Territory* (Australia), by Prof. A. J. Ewart and Miss Olive B. Davies, which gives the results of the Barclay Expedition and also incorporates the work of previous collectors in the region. There is a sketch map showing the route of the expedition, and the characteristic vegetation. Four appendices deal with Cyperaceae, Myrtaceae, Eucalypts and Acacias and there are lists of the economic and poisonous plants of the territory. Four new genera and about thirty new species are described and these are illustrated on twenty-seven plates.

The *Journal of the Fell and Rock Climbing Club of the English Lake District*, Vol. IV., Part 2 (3/-); edited by Mr. and Mrs. W. T. Palmer, is an exceptionally optimistic number. It contains a remarkable collection of interesting notes, (many of which are well illustrated), on such subjects as:—Botterill's Slab, Scafell, Nights Out, Making the best of it, A Day Trip to Scafell, Gaspard of Wasdale Head; Three Climbers, To the Fells, Camping amongst the Craggs in 1885, Ropes and Belays, Doe Craggs (Climbing Song with Music), Two New Climbs on Doe Craggs, Shadows and the Rocks, Wanderings in Skye, An Old Mountain Track, etc. The Roll of Honour is grand.

WESTMORLAND COLEOPTERA.

F. H. DAY, F.E.S.

(Continued from p. 79).

PHYTOPHAGA.

- Donacia crassipes* F. Windermere (Fowler).
D. clavipes F. Sunbiggin (Britten).
D. thalassina Germ. Rydal (Black).
D. simplex F. Cliburn Moss, Melkinthorpe, Sunbiggin Tarn (Britten).
D. cinerea Hbst. Rydal (Black).
D. sericea L. Rydal (Black), Cliburn Moss (Britten).
D. discolor Pz. Rydal (Black).
D. affinis Kunz. Ulleswater (Wood).
Lema cyanella L. (*lichenis* Voet.). Tebay (Bowman), Melkinthorpe, Cliburn, Glenridding (Britten), Witherslack (Day).
Cryptoccephalus labiatus L. Cliburn, Melkinthorpe (Britten), Witherslack (Day).
C. moraei L. Clappersgate (Blackburn).
Gastroidea viridula De G. Tebay (Bowman), Melkinthorpe (Britten).
G. polygoni L. Tebay (Bowman), Melkinthorpe (Britten), Lowther Park (Day).
Chrysomela staphylea L. Tebay (Bowman), Melkinthorpe (Britten), Kirkby Stephen (Thompson).
C. hyperici Forst. Cliburn (Britten).
C. varians Schal. Tebay (Bowman).
C. polita L. Kirkby Stephen (Thompson), Melkinthorpe, Cliburn, Whinfell (Britten), Witherslack (Day).
Phytodecta pallida L. Tebay (Bowman).
Phyllodecta vulgatissima L. Tebay (Bowman).
P. vitellinae L. Tebay (Bowman), Melkinthorpe, Cliburn, Clifton (Britten), Gaisgill (Day).
Hydrothassa aucta L. Tebay (Bowman), Melkinthorpe (Britten).
H. marginella L. Melkinthorpe (Britten), Kirkby Stephen (Day).
Prasocuris phellandrii L. Tebay (Bowman), Melkinthorpe, Cliburn (Britten).
P. junci Brahm. Melkinthorpe (Britten).
Phaedon cochleariae F. Melkinthorpe (Britten), Kirkby Stephen (Day).
P. tumidulus Germ. Tebay (Bowman), Melkinthorpe (Britten), Witherslack, Kirkby Stephen (Day).
P. armoraciae L. Tebay (Bowman), Melkinthorpe, Clifton (Britten), Kirkby Stephen (Day).
Luperus longicornis F. (*rufipes* Brit. Cat.). Witherslack, Ravenstonedale (Day).
L. flavipes L. Tebay (Bowman), Witherslack, Lowther Park (Day), Melkinthorpe, Cliburn Moss (Britten).
Lochmaea suturalis Th. Tebay (Bowman), Cliburn, Whinfell (Britten), Witherslack (Day).
Galerucella grisea Joann. (*sagittariae* Brit. Cat.). Cliburn Moss (Britten).
G. lineola F. Melkinthorpe (Britten).
G. tenella L. Melkinthorpe, Cliburn Moss (Britten).
Sermyla halensis L. Melkinthorpe, Cliburn (Britten).
Derocrepis (*Crepidodera*) *rufipes* L. Melkinthorpe (Britten), Lowther Park (Day).
Crepidodera transversa Marsh. Tebay (Bowman), Melkinthorpe (Britten), Lowther Park (Day).
C. ferruginea Scop. Witherslack (Day).

- Chalcoides fulvicornis* F. (*smaragdina* Foudr.). Melkinthorpe (Britten).
C. aurata Marsh. Melkinthorpe (Britten).
Hippuriphila modeeri L. Cliburn Moss, Melkinthorpe (Britten), Witherslack (Day).
Mantura obtusata Gyll. Melkinthorpe (Britten).
M. rustica L. Melkinthorpe (Britten).
Plectrocelis concinna Marsh. Tebay (Bowman), Melkinthorpe (Britten), Witherslack (Day).
Psylliodes napi Koch. Melkinthorpe (Britten), Kirkby Stephen (Day).
P. cuprea Koch. Sunbiggin (Britten).
P. affinis Pk. Melkinthorpe (Britten).
Halitica oleracea L. Witherslack (Day).
H. pusilla (Duft. ?). Tebay (Bowman).
Batophila rubi Pk. Witherslack (Day).
Phyllotreta sinuata Steph. Witherslack (Day).
P. undulata Kuts. Tebay (Bowman). Melkinthorpe (Britten), Witherslack (Day).
P. nemorum L. Melkinthorpe (Britten).
Aphithona coerulea Geoff. (*nonstriata* Brit. Cat.). Melkinthorpe (Britten).
Longitarsus luridus Scop. Tebay (Bowman), Melkinthorpe, Cliburn (Britten), Witherslack, Lowther Park (Day).
L. atricillus L. Tebay (Bowman), Melkinthorpe (Britten).
L. suturellus Duft. Melkinthorpe (Britten).
L. gracilis Kuts. Melkinthorpe (Britten).
L. melanocephalus De G. Melkinthorpe (Britten).
L. pratensis Panz. (*pusillus* Gyll.) Melkinthorpe (Britten).
L. jacobaeae Wat. Tebay (Bowman), Melkinthorpe (Britten).
Apteropeda globosa Ill. Melkinthorpe (Britten).
A. orbiculata Marsh. Melkinthorpe (Britten).
Mniophila muscorum Koch. Melkinthorpe, Cliburn (Britten).
Sphaeroderma testaceum F. (*cardui* Gyll.). Melkinthorpe (Britten), Witherslack (Day).
S. rubidum Graëlls. (*testaceum* Gyll.). Melkinthorpe (Britten).
Cassida viridis L. Melkinthorpe, Glenridding (Britten).
C. sanguinolenta F. Tebay (Bowman).
Pachymerus (Bruchus) chinensis L. (*pectinicornis* L.). Tebay (Bowman).

RHYNCHOPHORA.

- Anthrribus (Brachytarsus) variegatus* Fourc. (*varius* F.) Melkinthorpe (Britten).
Otiorrhynchus ligneus Ol. Tebay (Bowman), Melkinthorpe (Britten).
O. dubius Ström. (*maurus* Gyll.). Helvellyn, Place Fell (Wood).
O. singularis L. (*picipes* F.) Tebay (Bowman), Melkinthorpe, Cliburn, Glenridding (Britten), Witherslack (Day).
O. sulcatus F. Melkinthorpe (Britten).
O. rugifrons Gyll. Tebay (Bowman), Melkinthorpe (Britten).
O. ovatus L. Melkinthorpe (Britten).
O. desertus Rosen. Ab. *muscorum* Bris. Melkinthorpe (Britten).
Phyllobius glaucus Scop. (*calcaratus* F.). Tebay (Bowman), Melkinthorpe, Cliburn (Britten).
P. urticae De G. (*alneti* F.). Melkinthorpe, Cliburn (Britten), Ravenstonedale, Lowther Park (Day).
P. pyri L. Tebay (Bowman), Melkinthorpe (Britten), Witherslack, Ravenstonedale (Day).
P. argentatus L. Tebay (Bowman), Melkinthorpe, Glenridding (Britten), Ravenstonedale (Day).
P. maculicornis Germ. Melkinthorpe (Britten).
P. oblongus L. Tebay (Bowman), Melkinthorpe (Britten), Witherslack, Ravenstonedale (Day).

- P. viridicollis* F. Tebay (Bowman), Melkinthorpe (Britten), Witherslack, Kirkby Stephen (Day).
P. pomonae Ol. Tebay (Bowman), Melkinthorpe (Britten).
P. viridiaeris Laich. Tebay (Bowman), Melkinthorpe (Britten), Ravenstonedale (Day).
Polydrosus mollis Stroem. (*micans* F.). Kirkby Stephen (Thompson), Rydal (Black).
P. cervinus L. Melkinthorpe, Glenridding (Britten), Witherslack (Day).
P. tereticollis De G. Tebay (Bowman).
P. pterygomalis Sch. Melkinthorpe, Cliburn (Britten), Witherslack, Lowther Park (Day).
Sciaphilus asperatus Bonsd. (*muricatus* F. Tebay (Bowman), Melkinthorpe (Britten), Witherslack (Day).
Brachysomus echinatus Bonsd. Melkinthorpe (Britten).
Baryptihes araneiformis Schr. Melkinthorpe (Britten).
Strophosomus melanogrammus Forst. (*coryli* F.). Tebay (Bowman), Melkinthorpe, Cliburn (Britten), Witherslack (Day).
S. capitatus De G. (*fulvicornis* Walt.) Melkinthorpe (Britten).
S. faber Hbst. Melkinthorpe (Britten).
S. lateralis Pk. Melkinthorpe (Britten).
S. retusus Marsh. Melkinthorpe (Britten).
Sitona regensteinensis Hbst. Tebay (Bowman), Cliburn (Britten).
S. lineatus L. Witherslack (Day).
S. suturalis Steph. Melkinthorpe (Britten), Witherslack, Kirkby Stephen (Day).
S. sulcifrons Thunb. Tebay (Bowman), Melkinthorpe (Britten).
S. flavescens Marsh. Tebay (Bowman), Melkinthorpe (Britten), Kirkby Stephen (Day).
S. hispidulus F. Tebay (Bowman), Melkinthorpe (Britten), Witherslack (Day).
S. humeralis Steph. Melkinthorpe (Britten).
Barynotus obscurus F. Tebay (Bowman), Melkinthorpe (Britten).
B. moerens F. Tebay (Bowman).
B. squamosus Germ. ab. *schönherri* Zett. Tebay (Bowman), Melkinthorpe (Britten).
Tropiphorus tomentosus Marsh. Tebay (Bowman), Melkinthorpe (Britten).
T. obtusus Bons. Tebay (Bowman).
Alophus triguttatus F. Tebay (Bowman), Melkinthorpe (Britten).
Hylobius abietis L. Tebay (Bowman), Melkinthorpe, Cliburn, Whinfell (Britten).
Liosoma deflexum Pz. (*ovatum* Clair.) Tebay (Bowman), Cliburn, Melkinthorpe (Britten), Kirkby Stephen (Thompson, Day).
L. deflexum Pz. ab. *collare* Rye. Melkinthorpe (Britten).
Phytonomus (*Hypera*) *punctatus* F. Melkinthorpe (Britten).
P. rumicis L. Melkinthorpe (Britten).
P. nigrirostris F. Tebay (Bowman), Melkinthorpe (Britten).
P. arator L. (*polygona* L.) Melkinthorpe (Britten).
P. pedestris Pk. (*suspiciosus* Hbst.) Tebay (Bowman).
P. plantaginis De G. Tebay (Bowman), Melkinthorpe (Britten).
P. variabilis Hbst. Melkinthorpe (Britten).
P. trilineatus Marsh. Melkinthorpe (Britten).
Grypidius equiseti F. Witherslack (Day).
Notaris (*Errrhinus*) *acridulus* L. Tebay (Bowman), Melkinthorpe (Britten).
N. bimaculatus F. Melkinthorpe (Britten).
Dorytomus longimanus Forst. (*vorax* F.) Melkinthorpe (Britten).
D. tremulae Pk. Melkinthorpe (Britten).
D. taeniatus F. (*maculatus* Marsh.) Tebay (Bowman), Melkinthorpe (Britten), Witherslack (Day).
D. melanophthalmus Pk. Melkinthorpe (Britten).
D. rufulus Bed. (*pectoralis* Gyll.) Melkinthorpe (Britten).

- Orthochaetes setiger* Beck. Tebay (Bowman).
Cryptorrhynchus lapathi L. Melkinthorpe (Britten).
Coeliodes ruber Marsh. Melkinthorpe, Cliburn (Britten).
C. dryados Gmel. (*quercus* F.). Melkinthorpe (Britten), Lowther Park (Day).
C. rubicundus Hbst. Rydal (Black), Melkinthorpe (Britten).
Cidnorrhinus (*Coeliodes*) *4-maculatus* L. Tebay (Bowman), Melkinthorpe, Cliburn, Clifton, Whinfell (Britten), Witherslack, Kirkby Stephen (Day).
Allodactylus (*Coeliodes*) *affinis* Pk. (*geranii* Pk.). Tebay (Bowman), Melkinthorpe, Tirril, Pooley Bridge (Britten), Lowther Park, Ravenstone-dale, Gaisgill (Day).
Rhinoncus castor F. Cliburn, Whinfell (Britten).
R. pericarpus L. (Bowman), Melkinthorpe (Britten), Witherslack (Day).
Phytobius comari Hbst. Sunbiggin (Britten).
P. 4-tuberculatus F. Melkinthorpe (Britten).
Ceuthorrhynchidius troglodytes F. Tebay (Bowman), Melkinthorpe, Cliburn, Strickland (Britten).
Micrelus (*Ceuthorrhynchus*) *ericae* Gyll. Whinfell, Cliburn Moss (Britten). Witherslack (Day).
Ceuthorrhynchus floralis Pk. Melkinthorpe (Britten), Witherslack (Day).
C. pyrrhorhynchus Marsh. Melkinthorpe (Britten).
C. pollinarius Forst. Melkinthorpe (Britten).
C. pleurostigma Marsh. Melkinthorpe (Britten).
C. assimilis Pk. Tebay (Bowman), Melkinthorpe (Britten).
C. quadridens Pz. Melkinthorpe, Cliburn, Clifton (Britten), Witherslack (Day).
C. erysimi F. Melkinthorpe (Britten).
C. contractus Marsh. Tebay (Bowman), Melkinthorpe, Cliburn, Glenridding (Britten), Lowther Park (Day).
C. chalybaeus Auct. Tebay (Bowman), Melkinthorpe (Britten).
 (To be continued).

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No. 293 of *The Quarterly Journal of the Geological Society*, issued on May 6th, contains the Society's Proceedings from November 7th, 1917, to June 19th, 1918, so this publication is gradually getting up to date.

We have received the *Transactions and Journal of the Eastbourne Natural History, Photographic and Literary Society* for April. The publication contains a number of items on general subjects coming within the scope of the Society's work, together with some of distinct local value.

The *Transactions and Proceedings of the Perthshire Society of Natural Science*, Vol. VI., Part 5, contains details of the meetings of the Society, together with a presidential address; 'Some Glimpses of Life in Perth 300 years ago,' by W. Barclay; a presidential address by Mr. G. F. Bates, entitled 'Rocks found in the Bore at Waterhouse.' There is also a paper on Bronze Age Burial Urns, and on a Stone Cist found at Kildinny, both by T. M'Laren; Iceland and Its Birds, by J. G. M. Gordon; A Perthshire Naturalist—James Stewart McGregor, of Glenisla, by Peter Baxter, and other items.

The *Journal of the Northants Natural History Society and Field Club*, Vol. XIX., contains a valuable series of papers bearing upon the county, including such items as 'The River System of Northamptonshire,' by Beeby Thompson; James Dickson's List of Naseby Plants, by G. C. Druce; An Early Northampton Natural History Society, by Beeby Thompson and G. C. Druce; The Roman Occupation, by T. J. George; Northamptonshire Printing, etc., by R. W. Brown; Meteorological and other reports, as well as the reports of the Kettering and District Naturalists' Society and Field Club. The volume contains an excellent portrait of Mr. G. C. Druce in his robes as Mayor of Oxford.

THE BRISTLY MILLIPEDE AT SALTWICK BAY, NEAR WHITBY.

J. WILFRID JACKSON, F.G.S.,
Manchester Museum.

WHILST on a geological excursion to Saltwick Bay, on April 13th last, I had the good fortune to find several specimens of the Bristly Millipede, *Polyxenus lagurus* Linné. Being without suitable collecting tackle, I was unable to gain possession of more than two examples, which are now in the collection of the Rev. S. Graham and Dr. Hilda K. Brade-



Photo by]

Saltwick Bay, near Whitby.

[J.W.J.

Habitat of *Polyxenus lagurus* on grassy mound at extreme right.

Birks, to whom I am indebted for kindly confirming my identification. The millipedes appeared to me to be inhabiting a remarkable situation as I found them on the underside of a piece of alum shale which I turned over in search of fossils. The habitat was quite close to the sea-level and no vegetation except short grass was present. The accompanying photograph shows the habitat, which is on the grassy mound at the extreme right of the picture.

In *The Naturalist* for June 1st, 1916 (p. 181), this millipede is recorded from East Yorkshire by T. Stainforth, who reports having met with numerous examples among debris at the foot of larch trees in the higher part of Brantingham Dale, near Hull.

Through the kindness of the Rev. S. Graham and Dr. Hilda K. Brade-Birks I am enabled to incorporate in this note some particulars, not hitherto published, of the discovery of this species near St. Andrews. The specimens were obtained from debris at the foot of the Spindle Rock, on the East Shore of St. Andrews, in April and May, 1917, by Dr. W. E. Collinge, who reports that they were first noticed there by his son in August, 1915. Some of these specimens were sent by Mr. Brade-Birks to Professor Silvestri, the Italian expert, who first described *Polyxenus lapidicola* (a halophilous species). After careful comparison, this authority came to the conclusion that the St. Andrew's examples were *P. lagurus*, and in his reply states that 'it is very possible that this species contains some sub-species or varieties, but for such a conclusion it would be necessary to have a great deal of material from various countries.'

On referring to R. S. Bagnall's paper, 'On some Lancashire Myriapods new to the British Fauna, with Comments upon Halophilous Species' (*Lancs. and Ches. Nat.*, July, 1917, [publ. Aug. 23rd, 1917], pp. 104-109) I find that these St. Andrew's and Saltwick Bay records add another Diplopod to our coastal fauna, *Isobates* (*Thalassisobates*) *littoralis* Silvestri and *Cylindroiulus frisius* Verhoeff alone being the previously recorded halophilous members of this class (Diplopoda).

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DIPTERA.

Yorkshire Diptera Notes.—Amongst the few flies seen when walking up Inglebro' at Easter two seem hitherto unrecorded for the County:—*Hydrophorus nebulosus* Fln. of which several specimens were taken, and *Orphnephila testacea* Ruthé. The only well distributed species seen was *Sepsis cynipsea* L. At Austwick beck-head *Liancalus virens* Scop. was taken. This was also caught in Heseltine Ghyll in December. On the road home on April 22nd, *Bombylius major* L. was noted on Celandine at Eshton, Hetton and Beamsley, and the same fly being seen on garden arabis at Arnside on May 10th. Another addition to the Yorkshire list is *Orthocladus dolens* Wlk. in fair number at Bramhope ponds on May 4th, it is a large slow-moving fly with black body and whitish wings almost like a Bibio in appearance when flying. Mr. J. H. Ashworth has examined the three additions with me and *H. nebulosus* has been compared with Dr. Meade's specimens at the Leeds University.—CHRIS. A. CHEETHAM.

FIELD NOTES.

FISHES.

Large Yorkshire Trout.—I think Mr. H. B. Booth is in error in claiming as the record Yorkshire river trout, a fish weighing 10 lbs. 9 oz. This will, I believe, take second place, the heaviest of which I have any knowledge being a fish taken many years ago in the stream at Driffeld. It weighed 12½ lbs., and is now preserved in the Museum at Scarborough. Probably the enormous fish which he records as found after a flood on the Wharfe last December would have beaten it for size and weight.—W. J. CLARKE.

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CONCHOLOGY.

Vertigo pygmaea Drap.—This can only be considered a rare shell in this county. My father and I took one specimen while gathering the seeds of *Sagina opetala* on the stone steps going down to the lawn, in the Vicarage garden, Melton Ross, 23th July, 1916. We could never obtain another till this day, 16th May, 1919, when we found four on the very same spot, three living and one dead.—TOM W. WOODRUFFE-PEACOCK.

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SPONGES.

A Freshwater Sponge.—When the River Ancholme, which was canalled in 1688, was run off on April 25th, I took at the outfall of the Thirty Foot Drain, Cadney, a specimen of *Ephydatia mulleri*, one of the fresh-water sponges. It was originally over a foot in diameter. Mr. R. Kirkpatrick, of the British Museum, who has kindly named it for me, says, 'The specimen is crowded with innumerable gemmules or winter-buds—the minute millet seed-like bodies you could not understand. This species is rather rare in England.' My father thinks it undoubtedly duck—carried to us.—TOM W. WOODRUFFE-PEACOCK, Cadney, Brigg, 1st May, 1919.

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In *British Birds* for June, Miss E. L. Turner has a well illustrated paper on 'The Bittern in the Norfolk Broads,' and Mr. W. H. Mullens writes on 'The Ruff—an Early Record,' giving reproductions of some quaint old wood-cuts.

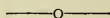
The Geological Magazine for June, in referring to the death of Sir Frank Crisp, Bart., states that 'His rock-garden at Friar Park, Henley, crowned with an accurate model of the Matterhorn, needed for its construction no less than 20,000 tons of Carboniferous Limestone from Yorkshire, and with the other gardens, caves, lakes, and cascades, renders this beautiful spot one of the finest gardens in England.' There is also a note 'On a Scandinavian Erratic from the Orkneys.'

CORRESPONDENCE.

HARMFUL AND USEFUL BIRDS.

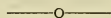
Referring to the 'Diagrammatic Representation of the Percentage of Food of the Jackdaw,' on page 193, if something on a larger scale and showing the damage and vice versa, done by other birds, for the birds that *ought to be preserved*, and on varnished paper, or linen, and on rollers, suitable for hanging in public schools, etc., could be prepared, they should be of use in teaching the generation to come, and probably instruct some of the teachers!—ALBERT ERNEST HALL, Southwell, Notts.

[We are making this suggestion to the Board of Agriculture.—ED.]



UNDOCKED DOGS THE QUICKER.

'I have a reprint of the first edition of *The Origin of Species*,' writes an old correspondent. 'Speaking of the tail of the dog as an aid in turning, Darwin says, "the aid must be slight, for the hare, with hardly any tail, can double quickly enough." I cannot find this passage in the badly indexed 6th edition, and so cannot give the volume and page. 'Now, some few months ago, I saw a fox-terrier with a tail the natural length, and made some remark about it to its mistress. She told me that her husband found "that terriers with shortened tails were much less quick after rabbits and vermin, so he did not crop the tails of any of the puppies he had." Now if this is true, and I see no reason to doubt it, either the tail in long-tailed animals is a greater help than Darwin thought, or the spine is made less supple by cutting off its continuation. Perhaps the quickness of the hare in turning depends on a general suppleness of limbs and spine, or some other quality which makes up for shortness of tail.' I cannot say, but someone else may be able to do so?—E. ADRIAN WOODRUFFE-PEACOCK, 22nd May, 1919.



DO LEAVES WANT WATERING?

'This will no doubt interest you,' writes a friend. 'I have some of the hybrid primulas which sprang from contiguity of plants at Kew, and are so called *Primula kewensis*. All through the winter though well-watered, so far as the roots were concerned, the leaves lay flat and looked unhealthy. Some days ago when the weather was warm I watered the leaves with soft water. From being quite flaccid, in an hour or two many of the leaves had risen up. Why was this? Do they absorb water through the stomata, or have the stomata to be wet with dew or rain or mist to act fully? If not, how does water applied to the leaves affect them differently from water supplied to the roots? Ferns like the Maidenhair (*Adiantum capillus-veneris* L.) must have the fronds watered by showers at intervals, if they are to thrive indoors. These mountain *Primulae* and their hybrids may be the same, for most of them I believe are from the highlands and mountain tops of the tropics or sub-tropics, so they generally love damp situations and moist air—but why cannot the water derived from the root fibres act on them like water (or presumably dew) falling directly on their foliage? Not only did the leaves rise up, but they became active too, greener and healthier looking quite suddenly.' I cannot answer this fully. Can any reader of *The Naturalist*?—E. ADRIAN WOODRUFFE-PEACOCK, 18th May, 1919.

Many leaves are unable to absorb water falling on them, and numerous surface modifications, such as wax and hairs, which prevent wetting, are familiar. But more commonly than is usually supposed, some leaves are able to absorb water and thus supplement their supply, as appears probable in the above case. The grower has here a nice little problem

for study; let him repeat the experiment, determine that the leaves do absorb water and how much, also under what conditions wilting takes place. By means of sections examine the structure of the leaf, particularly the epidermis, and he will not only find much to help towards a solution, but incidentally his account of the results would prove interesting to others.—ED.]

—: o :—

NORTHERN NEWS.

Professor G. Elliot Smith has been elected President of the Manchester Literary and Philosophical Society.

Among the new Fellows of the Royal Society we notice the names of Dr. J. W. Evans and Mr. Edward Heron-Allen.

By an unfortunate slip the three illustrations of birds' heads given in our last issue were wrongly described on page 213. 'Tree Sparrow' should have appeared instead of Hedge Sparrow.

The original matrix of the seal of the Linnean Society, which has been missing for some years, has been discovered among the property of an old resident in Sussex. One wonders how he got it?

We should like to congratulate Dr. Harold Wager, F.R.S., one of the past-presidents of the Yorkshire Naturalists' Union, on his election as the vice-president of the Linnean Society of London.

The Doncaster Scientific Society and other institutions with which the late Mrs. Corbett was connected, are inviting subscriptions towards a memorial to Mrs. Corbett, to take the form of a contribution to the National Society for the Prevention of Cruelty to Children, in which Mrs. Corbett took a great interest. Subscriptions should be sent to Mr. G. B. Bisat, Hon. Sec., 30 Nether Hall Road, Doncaster.

At the Annual Meeting of the Durham and Northumberland Archæological Society at Durham the question of whether the society should be continued was raised. The Chairman, Mr. J. S. Robson, of Newcastle, said he could not see the slightest reason why they should not continue. It would be a poor tribute to their late and venerable president (Dr. Greenwell) if they ceased their operations because he had gone. It was agreed that the society should be continued.

At the last Annual Meeting of the Yorkshire Numismatic Society there was an unusually large attendance of members and visitors. The annual reports, as submitted by the hon. secretary and hon. treasurer respectively, were adopted unanimously, and officers and council for the new session were elected as follows:—President, Mr. G. L. Shackles; vice-presidents, Messrs. J. F. Musham, F.E.S., and J. E. Bedford; hon. editor, Mr. T. Sheppard, M.Sc.; hon. treasurer, Mr. E. Croft; Council, Messrs. Brigg, Edwards, Ladell, Hutton, Turpin, Wroot and Kirkwood; hon. secretary, Mr. J. Digby Firth.

This year's meeting of the British Association—the 87th—is to be held at Bournemouth from September 9th to 13th. The president, the Hon. Sir Charles A. Parsons, K.C.B., will deliver his address on 'Engineering and the War.' The following presidents of sections have been appointed: Professor Andrew Gray, F.R.S. (Mathematical and Physical Science); Professor P. Phillips Bedson (Chemistry); Dr. J. W. Evans (Geology); Dr. F. A. Dixey, F.R.S. (Zoology); Professor L. W. Lyde (Geography); Sir Hugh Bell (Economic Science and Statistics); Professor J. E. Petavel, F.R.S. (Engineering); Professor Arthur Keith, F.R.S. (Anthropology); Professor Noel Paton, F.R.S. (Physiology); Sir Daniel Morris (Botany); Sir Napier Shaw, F.R.S. (Educational Science); and Professor W. Somerville (Agriculture). Sir Arthur Evans, F.R.S. will give a lecture on the evening of September 11th on the Palace of Minos and the prehistoric civilisation of Crete, and the next evening Mr. Sydney G. Brown, F.R.S., will speak on the Gyroscope and Compass.

The Journal of the Board of Agriculture for May contains notes on 'Silver Leaf in Fruit Trees'; and 'Onion Smut, a Disease new to Britain,' by A. D. Cotton.

The Board of Agriculture and Fisheries has issued a number of Guides to Smallholders at twopence each, post free. The following have already been received: Pig-keeping; Farm Crops; Soils and Manures; Fruit Growing on Small Holdings in England and Wales; Potato Growing on Small Holdings.

In 'Notes on British Odonata, 1918,' appearing in *The Entomologist* for May, are the following records of Lancashire and Cheshire Dragonflies, *Enallagma cyathigerum*, Rostherne, Cheshire, and Agecroft and Middleton, Lancashire; *Aeschna grandis*, Ringley, near Manchester, and Prestwich; *Ischnura elegans*, Middleton, near Manchester.

Mr. S. S. Buckman has been successful in completing the second volume of his *Yorkshire Type Ammonites*, with Part XVIII. recently received. This contains a title-page to the volume, appendix, index, as well as figures and descriptions of:—*Arietites impendens*, *Longaeviceras longaevum*, *Pseudocadoceras boreale*, *Gagaticeras funiculatum*, *Beaniceras costatum*, *Fimbrilytoceras fimbriatum*.

We learn from the *Yorkshire Post* of May 10th, that the death is announced of Mr. Samuel Lister Petty, of Dykelands, Ulverston, who was a recognised authority on the flora of the Lake District, and on this and other subjects was an occasional contributor to *The Yorkshire Post*. He was a member of the Cumberland and Westmorland Archæological and Antiquarian Society, the Viking Society, the Conchological Society, and the North Lonsdale Field Club. He had served for about 20 years as a Guardian and Urban Councillor. He leaves a widow and two daughters. Mr. Petty was a frequent contributor to the pages of *The Naturalist*.

From the following entry in a recent second-hand book catalogue issued in Birmingham, we should guess that there is a scarce Staffordshire figure, in colours, for sale:—'*Staffordshire Figure*.—THE PROPOSAL, Very Scarce.—A very scarce and genuine old Staffordshire Figure, showing a young gentleman "proposing" to the lady of his choice. The lady seated upon a couch, and the gentleman is kneeling beside her (in colours). [!]. On the lady's arm is a bird, beautifully coloured, but unfortunately the head has been broken off. Stands 11 inches high on an oblong base, 7½ inches long by 2½ inches. A very scarce old Staffordshire Figure in Colours.'

Referring to the remarks made in these columns respecting Mr. J. Reid Moir's Mammoth-ammonite, Mr. Moir has written to *Man*, strongly protesting against Sir Henry Howorth's criticism of his paper! He now agrees that the specimen is a cast of one of the chambers of an ammonite, but is preparing a further memoir in order to endeavour to prove that it has been carved. Mr. Moir has not yet complained to *The Naturalist*, though we have every reason to think he has seen our criticisms. We still contend that it would be much more satisfactory to the scientific world if Mr. Moir carried out his promise and exhibited the specimen at a meeting of some learned society.

The Chief Librarian at Worthing, having recently taken charge of the Museum there, has already produced a well printed and well illustrated guide to the collection, for the modest sum of two pence. Worthing is fortunate in being close to the famous British site at Cissbury, and in a centre where important Bronze-age, Roman and Saxon relics occur, many of which are described. The Museum seems to have a collection of well-mounted birds, Sussex antiquities, etc. 'Local' is evidently the key note of the Worthing Museum. The objects found in the district are worthy of a more detailed description, and we would suggest that someday some more detailed account of the treasures be published.

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THE MUSEUMS, HULL;

AND

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Contents :—

	PAGE
Notes and Comments:—The Museums Association; The Dinner; The President's Address; The War and Art Treasures; A Minister's Action; Salaries of Curators; Papers Read; Visits to Museums; Studies on Acari; Yorkshire Millstone Grit; Songs of the Birds; Nature Poems	249-254
The Jew's Ear Fungus (<i>Hirneola auricula-judæ</i> Fr.).—Walter Johnson, F.G.S. ...	255-258
Ornithological Observations and Reflections in Shetland—Edmund Selous ...	259-262
Common Wild Birds of the Scarborough District—W. Gyngell	263-266
The Spiders of Yorkshire—Wm. Falconer	267-270
Yorkshire Naturalists at Ryhill—W.E.L.W.	271-273
In Memoriam: William Ernest Sharp—W.J.F.	274-275
H. A. Paynter (illustrated)—H.B.B.	275-276
Field Notes:—The Greenfinch's Nest; Nightingales in Shropshire; <i>Cucullia verbasci</i> near Bingley; Cocoons of the Horse Leech	277-278
Correspondence:—Thomas Martyn's 'Figures of Non Descript Shells'; Cause of Melanism in <i>Phigalia pilosaria</i>	279-280
News from the Magazines	273
Northern News	262, 266, 270, 276, 280
Illustration	276

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NOTES AND COMMENTS.

THE MUSEUMS ASSOCIATION.

The Annual Conference of the Museums Association was held at Oxford on July 8th, 9th and 10th, under the genial presidency of Sir Henry H. Howorth, K.C.I.E., M.P., etc., who described himself as a 'boy of 76,' and certainly his energy, versatility and boyish enthusiasm were envied by the hundred persons interested in museum matters who were present. Oxford, with its glorious colleges, churches, libraries and museums, including the oldest museum in England—the Ashmolean—was a delightful setting for a successful meeting, and the total absence of anything in the form of local social functions or entertainments (even the theatres being closed !), resulted in the members finding their three days' constant attendance at the papers and discussions and visits to museums and libraries rather tiring. Notwithstanding this, the 'feast of reason and flow of soul' which a conference provides, found small parties sitting up till very late (or early) hours—albeit the same gentlemen were usually the first down to breakfast.

THE DINNER.

The thirtieth annual dinner of the Association was held at the headquarters, the Randolph Hotel, and there were over seventy present. Museum Curators are proverbially 'damned bad singers,' as they were told by a Bradford Alderman some years ago, and on this occasion 'God Save the King,' by no means an original melody, and the annual 'War Song of the Savages'—this year altered to 'Peace Song,' providing merriment in its 'hits' at well-known members of the Association, although the only songster available was suffering from a bad cold—was accompanied by a pianist from Cardiff on a piano which had seen better days. But all joined in the chorus ! Among the speakers, all entertaining and some amusing, were Sir Henry Howorth, Sir Herbert Warren, Sir Arthur Evans, Sir Martin Conway (the President-elect) ; Miss M. Frost, Miss Blackman, Professor Sollas, Professor Poulton, Professor Myers, Dr. Bather, Dr. Hoyle, Mr. Balfour, Mr. Grant Murray and Mr. Sheppard. It had apparently been arranged that as far as possible each speaker should refer to the subject upon which he was least familiar—in this way it fell to the last-named to propose the toast of the ladies ! On the previous evening the members of the 'O.B.L.,'* a mysterious body of past-presidents and others, bearing a somewhat similar relationship to the Museums Association, that the 'Red Lion Club' does to the British Association, dined. For three hours these B.L.'s revelled in the rights of the Order—the President, Sir Henry H. Howorth, proving himself to be a capable and delightful

* Order of the Blameless Life !

addition to the Order, and greatly pleased the members by wearing the badge conferred upon him at the secret initiation ceremony, for the rest of the meeting.

THE PRESIDENT'S ADDRESS.

As was expected, Sir Henry Howorth covered much ground in his presidential address, and spoke well, for over an hour, on matters important to museum curators and committees. He pointed out that they had seen for the last five years what was a terribly depressing spectacle in what a highly-taught and trained race of men had been capable of perpetrating after so many centuries of idealistic teaching and aspiration. A ruthless destruction of some of the worlds' greatest treasures, such as monuments of human art and records of human knowledge, which had left gaps that could not be filled, was terrible enough, but it seemed to him that far more terrible were the pitiless cruelties to unoffending men, women and children, and the use of weapons, which some of them hoped had passed into oblivion, and meant only to inflict physical pain and terror, and the trampling underfoot of the ethical teaching and standards which a hundred generations of noble men had accumulated. Not only so, but the nightmare that pursued their thoughts was that the work had been done wilfully, with premeditation, not by uneducated savages, like Huns and Mongols, Vandals and Goths, but by a whole race of more than a hundred million people, in many ways the best-trained and most widely taught in the world, led by their professors and pastors, and endowed with special scientific aptitude and skill in discovering and applying the latest machinery in the art of teaching, and in the method of research.

THE WAR AND ART TREASURES.

The whole German race had been enthusiastically united, so far as they knew, in applauding its soldiers when they desolated the glorious scenery and monuments of Belgium, Europe's lovely garden, and laid low such matchless monuments of art, religion and history as the Town Hall of Ypres, the Cathedral of Rheims, the venerable streets of Louvain, and notably its rich library, together with hundreds of matchless villages and churches. Some of them might think this irrelevant, but he would remind them that they were all teachers of men. Put the problem as they would, analyse it as they would, the result came out that neither mental gifts, nor trained intellects, nor indomitable industry and self-confidence and unbounded physical courage could save men from becoming animals and savages if they were so fashioned and trained, while all their knowledge would only enable them to invent and use more cruel and more efficient weapons for the destruction of every high aspiration.

A MINISTER'S ACTION.

He asked what had been the effect of the great war upon the institutions of which they were largely the guardians and custodians. A movement, fanned by the Philistine elements among them, clamoured for the closing of all museums and similar institutions. Fortunately, and largely by the efforts of themselves, this clamour was resisted in nearly all cases in the provinces and rural districts, and it was made possible to keep open the libraries, museums and picture galleries as before. Unfortunately this was not the case in the metropolis, and the whole machinery of research, in so far as it was performed in museums, was paralysed and wasted for five whole years. But this was not all, for it was coincident with the crowding of the metropolis with hundreds of thousands of soldiers from our colonies and dependencies, the very cream of the manhood of our race beyond the seas in all walks of life. It was deplorable to see thousands of these men thronging to the closed gates of the British and other London museums and sent away in crowds or admitted only to a very small portion of the collections, and these to be the least informing and least interesting. It was quite a consistent finale to the whole thing when the Minister chiefly responsible for it all announced in the House of Commons that he proposed, when things returned to their old status, to re-open first the taverns and public-houses which had been appropriated, and then to do the same with the galleries of science and art.

SALARIES OF CURATORS.

In conclusion, he said that in part a museum might be defined as an institution for the teaching of knowledge, and it was really astonishing that, this being the function of a museum curator, what a number of gifted men had been enrolled under this banner when they measured their duties with their quite inadequate remuneration, especially when they remembered that the cost of living had been doubled during the last five years, and that, in the meanwhile the wages of the artisan class had been pushed up by leaps and bounds. It was, he understood, the intention of the Government to introduce legislation to meet the case of those employed in the great museums, and this action ought to spur local authorities to do the same in many of the smaller towns which had museums and libraries.

PAPERS READ.

Among the papers prepared and discussed—usually at some length—were ‘The Pitt-Rivers Museum,’ by Mr. H. Balfour; ‘The Oldest Museum in England,’ by Mr. E. T. Leeds; ‘Timber Collections for Museums,’ by Mr. H. Stone; ‘An

Exhibit for Children,' by Mr. F. R. Rowley; 'A Revolving Frame for exhibiting Coins,' by Mr. E. E. Lowe; 'Preparing and Mounting Museum Specimens,' by Mr. L. P. W. Renouf; 'Open-Air and Folk Museums,' by Mr. G. R. Carline; 'The Hope Department of the University Museum,' by Professor Poulton; 'The Geological Collections at the University Museum,' by Professor Sollas; 'War Memorial Exhibitions,' by Mr. F. Leney; 'The Need for an Imperial Department of Illustrated Public Information,' by Mr. J. A. C. Deas; 'Care and Cleaning of Oil Paintings,' by Mr. E. Howarth; 'A Bureau of Exchange,' by Mr. J. H. Allchin; 'Suggestions for a Peace Museum,' by Professor J. L. Myers; and the question of transferring the control of Museums to the Education Authority, by Mr. E. E. Lowe. The suggested discussion on 'The Desirability of a Diploma for Museum Curators and the necessary course of Training,' which was to have been opened by Dr. Hoyle, Dr. Bather and Mr. I. J. Williams, had to be deferred on account of time.

VISITS TO MUSEUMS.

Much useful information was gathered by the members as a result of the visits to the various museums, under the guidance of the experts, while the famous Bodleian Library, the Cathedral, the Colleges, etc., were also examined; the Cathedral being in many ways a veritable museum of art and antiquities. With Professors Bourne, Poulton, Sollas, Bowman and Messrs. Leeds and Balfour as guides, it will be understood that the glorious museum treasures of Oxford were examined under the most favourable circumstances.

STUDIES ON ACARI.

The British Museum (Natural History) has issued a publication of particular interest and value at the present time, namely:—Studies on Acari. No. 1. The Genus *DEMODEX*, Owen, (with thirteen plates and four text-figures). By Stanley Hirst, at the price of ten shillings. From Dr. S. F. Harmer's Preface, we learn that although certain species give rise to troublesome affections of the skin, others are not definitely known to be harmful. *D. folliculorum*, a parasite which is so common that it has been stated to occur in 'practically every human being,' is regarded as harmless by the majority of the authorities who have studied it, although it has been accused by other students of the group of being instrumental of carrying certain grave diseases. Since these animals live embedded in the skin of their host, their detection is not easy without practice; but the success of the author in finding them in Mammals in which they had not been previously reported, or had been supposed to be rare, makes it appear probable that many species remain to be

discovered. The plates accompanying this report are exceptionally clear and will prove of service to students in this not altogether pleasant branch of Natural History.

YORKSHIRE MILLSTONE GRIT.

At a recent meeting of the Geological Society of London, Dr. A. Gilligan gave a remarkably full and detailed account of the Petrography of the Millstone Grit of Yorkshire, an excellent summary of which appears in the Abstracts of the Proceedings of the Geological Society of London, No. 1040. He shows that the most probable source of the material lay in a land-mass of continental extent, of which Scandinavia and the North of Scotland represent the remaining fragments. In these areas alone can the mineralogical demands of the Millstone Grit be satisfied, and the author institutes a comparison between the Torridon Sandstone and the Millstone Grit, which shows that their similarity of constitution is altogether too great to be merely fortuitous. He infers that, despite their disparity in age, they had a common source in that northern continent. That continent had probably been base-levelled in pre-Millstone Grit times, and the advent of this period was brought about by renewed uplift rejuvenating the rivers, which removed the old rotted soil-mantle and exposed fresh unleached rock. The extension of the land-mass across the North Atlantic would produce a monsoon type of climate, and the rock-débris broken up under semi-arid conditions, as seems clear from the extreme freshness of the feldspars in the grits, would be swept along rapidly by floods to the deltas of the large rivers. The author concludes by postulating one such large trunk river flowing southwards from the northern continent, and receiving tributaries from what are now Northern Scotland and Scandinavia, debouching somewhere off the north-east coast of England, the deltaic material of which (now consolidated) forms the Millstone Grit.

SONGS OF THE BIRDS.

We have had many communications in reference to Prof. Garstang's 'Songs of the Birds,' and one suggestion which has been made may prove of service to some of our Museums. It is that a series of small cases containing commoner British songsters be set apart for the benefit of the younger visitors, and that a copy of the poem taken from *The Naturalist* relating to each particular species, be placed near the case of the bird described, so that the child may form some idea of the nature of its note.

NATURE POEMS.

The other day we observed that Mr. W. Percival Westell had written a volume of Nature Poems, and as *The Naturalist*

is interested in Nature Poems, we expected a copy would be sent for review. This did not happen, and we consequently wrote for a copy, but received no encouragement. Being somewhat poetically inclined, we purchased a copy, which cost 2/6. We do not propose to review it, but we can say that the book is for sale if any of our readers care to buy it, and as some possible inducement we just quote four verses selected from different poems :—

A Poplar Hawk went flying by
 With clean-cut wings astir,
 A Sparrow watched its airy course
 And made a dart at her ;
 It missed its aim, and in disgust
 Returned to think it out,
 To fret and fume at such a loss
 And turn and twist about.

Weather-worn headland,
 Rugged and torn
 Silvered with lichen,
 Tossed by the storm ;
 Guarded by wild flowers,
 Red, white and blue,
 Nature's own emblems
 Of all that is true.

I love the Sun at all times,
 I feel its warm embrace,
 I love its magic life-flow,
 And hail its smiling face !

It's a faithful flower
 That I love to see,
 When the sunset's evening glow
 Makes the heart beat true,
 With a song anew,
 In the soul of a friend I know.

We remember hearing a story some time ago of two young ladies who were examined in singing. On comparing notes afterwards, one of the damsels asked the other if the examiner were religious, as all the time she was singing the examiner had walked up and down the room exclaiming : ' Oh ! my God, Oh ! my God ! ' Somehow, we were reminded of this story on reading these ' Nature Poems.'

THE JEW'S EAR FUNGUS

(*Hirneola auricula-judæ*, Fr.).

WALTER JOHNSON, F.G.S.

(Continued from page 230).

Looking day by day at two separate series of Jew's ears, growing respectively on the elm and the elder, I became aware of slight differences. The elm-nourished specimens had, on the whole, a smoother hymenial surface, the veins were less prominent, and the substance appeared to become thinner, by comparison, as old age approached. The specimens on the elder were a little more pruinose and opalescent. These divergences may not indicate more, for instance,—taking two phanerogams by way of illustration—than do the variations of the common rest-harrow (*Ononis arvensis*) in its spiny and its spineless condition, or of herb Robert (*Geranium robertianum*) when growing respectively in the hedgerow and on the sandy shore.

On consulting Berkeley, I found that the smoothness of the elm Jew's ear had been noticed by this writer. With reference to his illustration representing the Jew's ear, he says, 'Our figure is from specimens on elms, which have the surface of the hymenium freer from folds. I do not, however, consider it a distinct species.'*

IV.—RELATION TO HOST TREE. A subsidiary question concerns the physical condition of the host tree, and the portion most favoured by the fungus. The older semi-scientific writers are scarcely to be relied upon as to habitat. Sir Thomas Browne (1646), who calls the Jew's ear *Fungus sambucinus*, speaks of it as 'an excrescence about the roots of elder,'† and William Coles (1656), who uses the same Latin nomenclature, says that it is 'a kind of Sponge of a dusky-brown colour, growing at the roots of Trees, but especially of the Elder.'‡ These old authors may at once be dismissed, unless by 'roots' they mean 'stumps,' in which case the statements are partly true.

Fries, as we have seen, assigns the Jew's ear to trunks of elder. Worthington G. Smith says, 'Local on old trunks, especially elder and elm.'§ George Masee says, 'on old elder trunks,'|| and M. C. Cooke, 'not uncommonly found on old elder stumps, and sometimes on elms.'**

* M. J. Berkeley, 'Outlines of Brit. Fungology,' 1860, p. 289.

† *Pseudodoxia Epidemica* [Works,' ed. S. Wilkin, 1884, I., p. 214]

‡ 'The Art of Simpling,' 1656, pp. 39-40.

§ 'Guide to Sowerby's Models of Brit. Fungi,' (Brit. Mus.), 1893, p. 62.

|| 'Brit. Fungi,' [1911], p. 446.

** 'Brit. Fungi,' 5th edition, 1884, p. 91

Next, as to the condition of the tree which is attacked, we have Berkeley's dictum, 'living trees, especially elder,'* against which we may put Kerner and Oliver's observation, 'not infrequent on dead branches of elder.'† Finally, to complete the circle, Prantl speaks of this fungus as one of those 'not rare on rotten wood.'‡ Collating these various statements and comparing them with one's own observations, one would say that *Hirneola* grows on stumps, trunks, and branches, but chiefly on the two last-named, that the elder (or elm) is nearly always a living specimen, but that decay is usually to be discovered in some portion of the tree. The tree need not necessarily be very old, though aged elders support the finest Jew's ears. The fungus thrives both on the bark and on the bare wood from which the bark has fallen. In these cases, some kind of disease has probably commenced, and *Hirneola* hastens its course. Viewing all the facts, it seems preferable to call the Jew's ear a parasite, or a wound-parasite, like *Fistulina*, rather than a saprophyte, but usage is here very tolerant.

Concerning distribution, the adjective 'common' is fairly applicable, if the word 'local' be added. The range seems to embrace most parts of England and Wales—I cannot speak for other British areas. The South of England, and more particularly the Southern coast, presents the greatest profusion, both as regards the number and the size of specimens. Berkeley, by the way, declares that the Jew's ear is 'a perfect cosmopolite,'§ but he must have been thinking of the genus, not the species. Nevertheless his statement is made with definite reference to our own species of *Hirneola*. No other European species appears to be known, though there are thirteen other species scattered in various parts of the world.||

V.—ARRANGEMENT AND SIZE. The fungus is found both in isolated positions on the host tree, and also in groups or clusters, but the scattered members commonly represent the pioneers of a new colony. The clusters are arranged shelf-wise, with imbrication of the individual 'ears.' The younger fungi lie closely pressed on the tree, but the older ones develop a pendulous, overhanging lip. There is also a tendency, proved by a balance of observations, to seek the underside of the branch, or at least the northern side. It has been noted that, when the Jew's ear grows on a perpendicular stump,

* In Sir J. E. Smith's 'Eng.-Flora,' 1836, V. pt. 2, pp. 217-8.

† 'Nat. Hist. of Plants,' 1902, II., p. 687.

‡ K. Prantl, 'Elem. Text-Book of Botany,' ed. S. H. Vines, 1892, p. 141.

§ 'Cryptogamic Botany,' 1857, p. 355.

|| E. Fries, 'Hymenomycetes Europæi,' 1834, p. 695.

it 'turns upward,'* and Mrs. Hussey considered that this point alone separated the species from *Exidia glandulosa*,† that strange fungus popularly called 'witches' butter.'

In the case of the mushroom type of Hymenomycetes, the umbrella-like cap is believed to furnish a protection of the spore-bearing surface against dust and rain, as well as from snails and slugs.‡ The flap, or cowl, of *Hirneola* would be a far less adequate safeguard against these foes. Dust and grit lodge within the folds of the hood. Woodlice, at all stages of their metamorphoses, hide in the dark spaces between the fungus and the tree. The larvæ of small beetles, with an occasional caterpillar or earwig, explore each recess, and do not seem to enjoy expulsion. Whether these creatures aid greatly in the dispersion of the conidia—they must do so to a limited extent—I do not know. But even if wind be alone sufficient for the purpose they may supplement its work. Access to the spore-bearing surface then, is easy both for living and inorganic agents; the hood is not a serious hindrance. Again, rain may shoot off the hood, and this is a service to the Jew's ear. Since, however, dampness, along with warmth, is essential to the germination of the conidia, protection might possibly be too complete. The speculation here arises whether the overfold is not in some manner associated with avoidance of direct sunlight. Incidentally, it may be added that, after keeping *Hirneola* in a damp dish for a week or two, the glass covers, frequently become clouded with numbers of a species of nematode worm, resembling the familiar 'vinegar eels' (*Anguillula aceti*). These thread-like worms may perhaps emerge from the decaying wood.

Fully grown specimens of the Jew's ear are, by the text books, accorded a diameter of from one to three inches. In the Landslip, near Lyme Regis, I have often seen examples reaching a diameter of three and a half inches, while on an aged elder which grew on Nine Barrow Down, near Swanage, I noted individual 'ears' of four and five inches. The largest specimen shown in the photograph, and gathered in Richmond Park, measures four inches in long diameter. Extraordinarily fine specimens may be found in Devon and Cornwall, more particularly on the coast, for some reason not easy to suggest.

A writer on popular botany gives a whimsical account of the size of Jew's ears found in Wiltshire: 'The plants reminded us of large ears; as long, and thrice as broad, as those of a full-sized lop-eared tame rabbit.'§ The comparison reminds

* J. Stevenson, *op. cit.*, II., p. 315

† T. J. Hussey, 'Illus. of Brit. Mycology,' 1847, facing Pl. liii.

‡ Massee, 'Brit. Fungi,' p. 10.

§ Margaret Plues, 'Rambles in search of Flowerless Plants,' 1868,

one of the Yorkshireman's phrase, 'as big as a lump of chalk.'

VI.—SCIENTIFIC NAME. The earliest record of a definite Latin name for the Jew's ear seems to belong to the year 1597, when Gerard alludes to it as 'a certaine excrescence called *Auricula Judæ*, or *Iewes Eare*, . . . somewhat like now and then to a man's eare.* In Thomas Johnson's edition of Gerard, published in 1633, the same name is given, with the fanciful description little altered.† Writing not many years after this date (1646), Sir Thomas Browne, as we have already seen, speaks of *Fungus sambucinus*. Coles, in 1656, copies Gerard's nomenclature.‡

Coming to Linnæus, we find that he recognized two names, *Peziza auricula judæ* § and *Tremella auricula judæ*, || and it would seem, assuming he is always cited correctly, that there were variations of these. The several groups, of course, had not been carefully differentiated at that period.

Fries, in 1823, adopted the name *Exidia Auricula Judæ*, dividing his *Exidia* group into six tribes, one of which was composed of the *Auriculæ*. ¶ In 1834, Fries gave the emendation *Hirneola auricula judæ*, ** and by this name the fungus is now commonly known. There have been trifling vicissitudes with respect to capital letters and the hyphen, but these are unimportant. In strictness, *Auricula*, as an old name, should, I believe, have a capital. Berkeley, in 1836†† and 1857,‡‡ and Mrs. Hussey, in 1847,§§ were still using the earlier of the names employed by Fries, and it was not until 1860 that we find Berkeley adopting the emended form. |||| To this form, most of the succeeding writers, such as Cooke, Massee, Hay, Worthington Smith, Stevenson, Britten and Holland, have yielded assent, but there have been exceptions. The British Mycological Society, I understand, has adopted *Auricularia Auricula-Judæ*, but perhaps with questionable advantage.

(*To be continued*).

* J. Gerard, 'Herball,' 1597, II., p. 1233 (Bk. iii., c. 71).

† p. 1421-2.

‡ Coles, *op. cit.*, pp. 39-40.

§ 'Species Plantarum,' 1763, II., p. 1651.

|| *Op. cit.*, II., p. 1625.

¶ 'Systema Mycologicum,' II., pp. 221-2.

** 'Hymen. Europ.', p. 695.

†† In Smith's 'Eng. Flora,' *loc. cit.*

‡‡ 'Cryptog. Botany,' p. 355.

§§ 'Illus. of Brit. Mycol,' *loc. cit.*

|||| 'Outlines of Brit. Fungology,' p. 289.

ORNITHOLOGICAL OBSERVATIONS AND REFLECTIONS IN SHETLAND.

EDMUND SELOUS.

(*Continued from page 168*).

Darwin, I think, somewhere remarks that any special kind of voluntary association between one species and another must be for the mutual advantage of both. This is no doubt true, if we look to origins only, and if, in the definition of 'advantage,' we include a mere feeling of satisfaction, without further benefit; for it seems to me quite possible that this may sometimes alone have led to the tie, though we may not be able to analyse the sensation—the imponderabilia are not quite confined to *Homo sapiens*. Once formed, however, any kind of commensalism, or, at least, the appearance of it, might conceivably continue, through inheritance, long after the mutual advantage on which it was founded had ceased to exist. Thus, should the Rhinoceros, before it is exterminated, cease, for some reason, to harbour parasites, it is, I think, by no means, unlikely that the Rhinoceros-bird would continue to attend it; and it is even possible that the still more intimate relations which exist between the crocodile and Crocodile-bird of the Nile, would not, in such a case, be immediately broken. So, too, the habit which Starlings have of associating themselves with cattle and sheep may have commenced—or rather it certainly did commence at a time when it was more profitable to do so (and this on both sides) owing to these animals being then less attended to by their masters—pre-dip days we may call them—and be continued now through tradition, each generation of Starlings passing on the habit, though now without relevancy, to the next. A habit, in fact, once formed, becomes a pleasure, which is not only profit enough, but there is little profit without it. In so far as the Starlings are concerned, these remarks would more specially apply to the Shetlands, where the winds and poverty of vegetation, more than the climate, probably, are less favourable to insect life than on the mainland.

OCTOBER 22ND.—Just before it got too dark to use the glasses, I saw something, for the first time, of the 'Dos' (anglice Rock-Pigeons—*Columbia livia**) in their 'hellirs' or caves.

A huge buttress in the line of the cliffs had been eaten subærially, or perhaps blasted, through the explosive agency

* So known to Darwin. I cannot understand any naturalist, after him, wishing to change the name, but another one seems in use now.

of the sea, as may be seen on a smaller scale in Portland,* out of the hillside, making a precipice, with its face from the sea, which, by reason of a similar projection almost fronting it, at a much lower level, ended in a deep, gloomy pit. In the seaward side of this was the cavern, into which the sea entered through two small tunnels in the overhanging rock, above the inland outlet of which the birds have their dormitories. Looking down from above, these appeared to be situated on ledges, and fairly roomy ones, but resolved themselves, on my getting close beneath them, into mere scoops or scrapes, as one may call them, in the rocky wall, and so little removed from its own inclination that it seemed wonderful any bird should be able to keep its place, much less sleep, in them—so, at least, it looked. I counted about a dozen of these clefts, in each of which sat a single bird only, a fact which goes to confirm my impression of their small size, for surely, otherwise, so conjugal a species would have preferred to roost conjugally. Still it may be said that this is evidence to the contrary, and that, were such their choice, the birds would select other roosting places, in conformity with it. Possibly, however, such ideal caverns are limited in number, and the best must be made of such as are available. It would be interesting therefore to compare the habits, in this respect, of these wild Blue-rocks, with those of their domestic descendants. On the piled rocks and boulders immediately under these roosting places, and forming the bottom and narrowest part of the pit, were masses of the birds' droppings, which, in places, had assumed the form of a sugar-loaf. One of these rose six and a half inches from the rock on which it stood, was two feet eight inches in circumference at its base, and some two inches broad at its apex. Another was an inch higher, but rose from a narrower base. I cannot, myself, estimate the length of time during which these birds must have roosted, for these heaps to have accumulated. Not very great, perhaps, but, during such time as it took, their sanctum had, in all probability, remained unvisited, for few—and certainly no boy—would have left, as I did, such monuments standing. There was no trace or sign of any of the clefts having held nests, nor did this seem possible.

* This explanation was given me by a shepherd there. The ground, here more level, was, he said, speaking as of something well known locally, blown away, in the manner and with the sound of an explosion. He imagined it to have been owing to the uprush of compressed air, enclosed by the sea at the end of the narrow, tongue-like tunnel which it had excavated beneath, as could be seen through the rent thus made, in trying to jump which, two soldiers, I was afterwards told, had been drowned. Whether this would hold I do not know, but it seemed to me a creditable surmise—if indeed it was original—for a man of my informant's calling.

That they could hold the birds themselves, or the birds hold on to them, was, I thought, sufficiently wonderful. However, what seemed so where I was, might, perhaps, on close inspection have proved simple enough.

Hooded Crows, this morning, picking about, on the rocks. One lifts his head from this employment, with some small, hard thing in his bill—evidently a shell-fish, probably one of the small limpets, with smaller clinging things upon them, as most of them have. He holds it nicely and fingeringly, as one might say, between just the two tips of the mandibles, but the next moment he has turned away from me, so that I do not see him swallow it. Afterwards, having again bent his head and raised it, he turns round and presents the tip of his bill to his partner, who leans forward from another rock, and touches it with hers. This was what it looked like. That there was something held by the tip of the bill, and that this was the real object presented, may I think be assumed, but I did not actually see it, so cannot vouch for the delivery, against the possible alternative explanation of such an action being no more than a billing. This, then, is to be set against anything suggestive of conjugal egotism in this species, as recorded by me.

A Whimbrel is standing in the sea amidst floating brown seaweed, some way up his shanks, seeking for what he can get. Others are on the wet tidal sands at the head of the voe, and one of these is a good deal disconcerted by a 'Hoodie' who, leaving his fellows, advances upon him, hopping in the most absurd manner, the Whimbrel retreating with little picked steps, and a sort of shocked, drawing-room manner. The contrast between the two birds and the two gaits was most ludicrous, the Crow like a vulgar blackleg, or lower-class man-about-town, the Whimbrel an affected fine lady, of elegant carriage, and with pretensions to nerves and sensibilities. Of the two I preferred the Crow.

Whilst watching the Crows, I heard from the voe that sudden, unaccustomed cry—short, loud and pain-fraught—which a Herring Gull utters, as I think now, only under the stress of pain. Looking up, I saw a full-sized one, but in juvenile plumage, just rising from the water, with two Shags unusually close to him. Something peculiar in the appearance of the latter was, at once, noticeable. They were excited, evidently—pleasantly excited I thought—as though something eventful had just happened. They seemed rejoicing together, and, on the impetus of this mutual emotion, they, both at once, rose and flew away over the voe. Beyond a doubt, when I first heard the Gull's cry, one or both of them had attacked him under the water, in the way I have before noticed.

I get, too, now, a hint of some hostility on the part of Herring Gulls towards Eider Ducks, though, for a standard work (but that's no standard) it might hardly pass as conclusive. I have, however, little doubt, myself, as I saw one of the former in the brown stage of plumage, fly right at one of the latter—a male—who dived, to avoid him, from some little distance, and I had all but seen—caught glimpses, that is, out of the corner of my eye—of some previous incidents of the same sort. The brown Herring Gull was almost on the Eider Duck's back, and covered the same water, as he went down, so that I can see no other explanation. The particular bird thus singled out was one of a small band that had been swimming and diving in the neighbourhood of some rocks, as the tide was going out, and the Herring Gull in question also belonged to a party there or adjacently established. Both the two species feed largely on Crustaceans and Molluscs, and, after his own very imperfect manner (which I have described*), the Herring Gull dives for them equally with the Eider Duck. Having the same habits, in this respect, therefore, and haunting the same spots along the coastline, they would naturally come into competition. This, then, in all probability, is the explanation of the above incident, but it is not equally clear why the Shag should nourish hostility against the Herring Gull—as it certainly does—for the latter can hardly be said to trespass on its preserves, which are under water, over the seas at large. Moreover, there are fish enough for all and to spare, even with man thrown in. There is perhaps a greater amount of causeless aggression in Nature—by which I mean not due to the struggle for existence—than is generally recognised.

(*To be continued*).

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At the last annual meeting of the *Darlington and Teesdale Naturalists' Field Club*, it was reported that the evening meetings had been very successful and well attended, and had been held weekly throughout the year. The excursions, however, due to the prevailing conditions, had not been so satisfactory. The membership had increased from 81 to 90, and the Society had a balance in hand of £23, notwithstanding the fact that £15 14s. had been spent on cabinets and books during the year. The following resolutions were unanimously passed:—'This club expresses its hearty approval of the proposal to establish a public Museum in Darlington, and is prepared to offer its support and assistance in every way,' also: 'That "Arbor Day," October 21st, of each year, be observed by the Club and that one or more trees be planted and a record kept of all necessary data for the observation of its characteristics and suitability to the soil of the district.' The President is Mr. J. W. Burchby, the Treasurer, Mr. W. R. Wooler, and the Hon. Secretary, Mr. J. E. Nowers, of 6 East Mount Crescent, Darlington.

* See ante. p. 385.

COMMON WILD BIRDS OF THE SCARBOROUGH DISTRICT.

W. GYNGELL.

(Continued from page 176).

The Short-eared Owl (*Asio accipitrinus* Pallas). This winter visitor is only common on occasion, and is better known to sportsmen who flush it whilst shooting over turnips and stubbles. Sometimes two or three may be seen flying over the moorlands, the carrs or along the cliffs in broad daylight, but its numbers vary much from year to year. The earliest record of its appearance is September 18th.

*The Tawny Owl (*Syrnium aluco* L.). This bird is the largest, noisiest and commonest of our local owls. It inhabits almost every old wood in the district and may be found high up the moorland ravines where only a few stunted birches and rowans are found. Its loud and distinctly musical hoot may be heard almost any night within the borough, and it often hoots in the daytime. I heard it at 2 p.m. yesterday. In the quiet of the open country its voice is clearly audible at a distance of two miles. During the day it roosts chiefly in large holes in trees or clefts in cliffs and quarries, and in such places it nests at about the same time of the year as the long-eared species. Eggs of both having been found by March 11th. In addition to such favourite eyries, rabbit burrows are regularly selected and eggs are often laid and broods reared in old nests of the carrion crow. Once whilst hunting for crow's nests I flushed a large bird from a large nest in a tall tree top. Having climbed to within two yards of the nest I distinctly heard the chirping of young birds that I presumed were crows. Arrived immediately below the nest I put my hand over the side and felt something soft within the cradle of sticks. Another pull upwards and I could see within. No young birds at all but two *white* eggs, obviously not crow's eggs which are green and spotted; and lying beside them two dead field voles, the something soft that I had felt. The chirping was still to be heard, but it came from within the eggs then just splitting open. It was the menage of a tawny owl. So much for circumstantial evidence! The young tawny owl is more easily reared from the nest than are the other common species. He thrives on any sort of animal food, but best on that which is furred or feathered; and he will soon accommodate himself to snails, worms, fish or insects, and become very tame. This would be an outrageously long chapter did I say all I would about this, one of my most favourite birds. The tawny owl sits very closely, and I have more than once caught it in its nest, but it is a powerful bird with claws sharp as needles and needs careful handling. The globose eggs weigh about $1\frac{1}{2}$ oz., each. The food that I have found in the owl's larder has usually been voles, but half-grown rats and rabbits and on one occasion two young thrushes have also been found.

The Sparrow-Hawk (*Accipiter nisus* L.). It is difficult to say if this hawk or the Kestrel is the more common. If we judged by the numbers seen, the latter would seem to be ten times as numerous as the former, for the Kestrel seems as though it might have an object in calling our attention to its presence, as it hangs like a kite suspended in air, curves round for a short distance and then hangs up again, perhaps within fifty yards of us. Should there be a Kestrel anywhere within a mile, one is certain to see it very soon. Very different is the behaviour of the dashing sparrow-hawk, that may come upon us from round the corner, catch up its prey from under our nose and be off like lightning before we can say 'What was that.' At another time *we* may surprise *it*, a lark or a finch will be dropped at our feet and again we know that it was a sparrow-hawk.

I have seen it leave its nest and fly off with such rapidity that the impression gained was that of a swift rather than a hawk. At other times it may be seen skimming along more leisurely. If I might judge by the sparrow-hawks' nests that I have found, this bird is more common than the Kestrel. My experience of the sparrow hawk is that it *builds its own nest*, and that this nest is usually, even when seen from the ground below, quite unmistakable for anything else. Often it is conspicuously placed in the crown of an oak tree of only moderate height, is a larger structure than that of all common woodland birds, the Carrion Crow excepted, and here where the crow rarely nests in our largest wood, the large nest of the sparrow hawk is not rare. Even where there is suspicion that the hawk was not the architect, the common presence of large sticks that have been broken off with green leaves upon them is sufficient proof that at least there has been some recent original work done. But the nest may be in a scotch fir or spruce or amongst the small branches against a tree trunk. Sometimes as low down as 18 feet. I have never found more than five eggs in a nest. They are laid on alternate days and weigh three quarters of an ounce each.

*The Kestrel (*Falco tinnunculus* L.). This and the last-named species still hold their own against the gamekeeper in about the same numbers as thirty years ago. The Kestrel is as much at home on the sea-cliffs as about the inland country side, and it nests regularly within the borough, where it has suitable cliff and woodland sites. Here, when an old nest is adopted, it is most frequently that of a rook or carrion crow, but that of the Magpie is not despised when placed sufficiently high. April 22nd is my earliest date for eggs and six the largest number found in a nest, they weigh .68 oz.

I have seen many instances of this hawk's fearlessness of man. Once here on the esplanade one passed within six feet of me and flitted up underneath the balcony of a hotel. Another time one hovered over the Spa grounds within 20 feet of me. Whilst watching the hovering Kestrel, always head to wind, one sees that the bird's position does not change, neither rising, falling nor moving to left or right when seen silhouetted against distant objects.

The Cormorant (*Phalacrocorax carbo* L.). A common resident bird, it nests regularly at the Peak, and occasionally on the cliffs north of Filey. Here it may be seen sitting on eggs as early as May 6th.

The Common Heron (*Ardea cinerea* L.). There is still a small nesting colony or heronry in our district, and birds may be seen fishing on our shores or on the becks and rivers at all times of the year. In swamps nests are sometimes built in trees within 25 feet of the ground, but the tallest trees available are usually selected. I have found as many as five eggs in a nest.

*The Mallard (*Anas boscas* L.). A very common winter visitor and commoner now than formerly as a breeding species. Usually the nest is placed by stream or mere fairly close to the water, though I have found them hundreds of yards away from it, quite exposed in open park land. A few hours after hatching, the young can swim, chase and catch insects with great facility. The egg of the Mallard's mate weighs 1.82 oz.

*The Pochard (*Fuligula ferina* L.). On our large ponds this is our most abundant duck in winter, when scores may be seen together on one piece of water. In recent years it has returned to one of its first known breeding haunts in Britain, Scarboro' Mere, where it now nests again annually. Most nests that I have seen have been built in the water among grass or aquatic herbage, but occasionally they are met with in dense beds of dead rushes. On leaving its nest, the pochard flies low and settles on the water. I have found as many as eleven eggs in a nest, weight 2.08 to 2.49 oz.

The Common Scoter (*Oedemia nigra* L.). This, our commonest sea duck, may often be seen in winter in little bunches floating just beyond

the breakers off the Spa grounds. Continually diving and rising again, sometimes the whole party may be immersed at once, but generally there are some upon and others below the surface, constantly changing places. I have taken hundreds of marine mollusca mostly *Rissoa parva*, from the crop of a bird that had been shot locally.

*The Ring Dove (*Columba palumbus* L.). An abundant resident bird nesting not only in all large woods and fir plantations, but also in isolated bushes well out on the high moors. Its well-known coo may be heard from Jan. 21st until October 3rd and as early as 3-40 on a midsummer morn. The complete coo note is always of five syllables, the last two in quicker time than the first three. When this has been repeated several times it is followed by a final faint and quick 'oo.' It may be heard from January 21st until October 3rd. I have found eggs in the nest, never more than two, by April 5th. The nest, usually placed amongst the branches, I have on one occasion found on the flat top of a pollard willow. Built at a fair height above ground, it is occasionally no more than 4 feet. It generally has a foundation of larch twigs, with birch twigs above, heather twigs are sometimes used in Moorland districts, grass roots and some feathers are commonly added. An egg weighs .87 oz.

*The Stock-Dove (*Columba ænas* L.). A common but little known resident bird though much less abundant than the Ring-Dove. It is equally at home in the woods and on the sea-cliffs where nesting in crevices it is sometimes confounded with the Rock Dove and often so called. It nests in inland cliffs and quarries and also in holes in trees. There is usually a nest in one of the Bride-stones. I have never found any nest lining in these holes, whether in cliff or tree. The two eggs each weighing half an ounce are of a very pale cream color. This fact and the more rapid wing movements of the bird, when it left its nest were noticed by the writer when finding his first nest. 'Hoo-wook' is the very quiet song it sings from March 12th onwards, but I have not heard it continued late in summer. Eggs may be found by April 15th.

The Rock Dove (*Columba livia* J. F. Gmelin). A fair number of birds nest regularly in some of the caves of Speeton and Filey cliffs, whence eggs and young birds are from time to time taken by fishermen and others, but judging from the large size of most of the eggs that I have seen from these haunts, I imagine that domestic pigeons often join and interbreed with the wild birds. Though not referring to this species in a wild state, I may here note a strange occurrence respecting a tame pigeon that I saw at Filey. The bird flew up and down over the sea, close to the sea-wall and repeatedly attempted to alight on the water, once seeming actually to touch it. It came again and again to about the same spot, rounded up to windward and tried to settle just as a gull would do. Eventually it flew away over the town. Though somewhat like, it was not a pure *Columba livia*.

The Turtle Dove (*Turtur communis* Selby). A summer visitor that has greatly increased in numbers during the last thirty years, and one that nests regularly so near the Borough, that I was tempted to put the asterisk before its name. I have no certain date of its first arrival, but have seen eggs in its transparent nest on May 17th. This is generally placed from 5½ to 13 feet only above ground, usually in thin hawthorn bush or hedge, though I have found it in spruce. Made of larch twigs and lined with fine roots, the two eggs each weigh .27 ozs. One nest found was built on the top of an old blackbird's nest a very unorthodox proceeding. The 'coo' would be better described as a purr—corr-oo, corr-oo, the oo sounded more like o and the r given its full northern sound, not as a southern Briton would give it, who makes the word porter rhyme with water. I have never but once seen our beautiful English Turtle dove kept in a cage, whereas all are familiar with the Collared Turtle Dove *T. risorius* and its 'Cook'-er-a-coo.'

The Red Grouse (*Lagopus scoticus* L.). Common and resident it breeds on all the local moors from within three miles of the town. When the cock gives up crowing I cannot say, but I have heard his full 'Birbeck, go-back, go-back, go-back,' on December 28th. Eggs may be found by May 6th. They weigh .88 oz. The nest is in both short and rank heather.

*The Pheasant. Both *Phasianus colchicus* L. and *P. torquatus* are 'preserved' in the district, often straying into town and nesting sometimes in allotment gardens. They are also occasionally kept in confinement. A cock bird and two hens so domesticated, produced 122 eggs in one season. I once found a nest containing twenty-two eggs, all addled, and the devoted bird still sitting on August 15th. This set was evidently the production of two hens for half the eggs were of the normal size and colouring, the remainder being smaller and of the blue color not very uncommonly found here. I broke the lot and thus relieved the poor sitting bird.

I have not found eggs before April 26th. Their full weight is 1.09 ozs., but some weigh much less. The nest, made of dead grass, herbage, leaves and feathers, may be found in open fields as well as in woods, and often out on the grouse moors. The pheasant when flying away after being suddenly flushed makes a peculiar sharp squeak when a few yards off the ground. The call note may be spelt *Kurdurk*, *Kurdurk*, *Kurdurk*.

*The Common Partridge (*Perdix cinerea* Latham). Common here, as in most English counties, I have seen them in covies as late as January 24th. The earliest date for eggs is May 1st, and the latest that I have known June 22nd. Nests are usually amongst rough herbage at the sides of fields and in hedge-rows. One I found contained much chopped straw, perhaps not the work of the bird. Eighteen eggs is the largest number that I have found in a nest. An egg weighs half an ounce.

The Red-legged Partridge (*Cacabis rufa* L.) scarcely known in the district thirty years ago, this bird has steadily increased in numbers in recent years, and is now comparatively common, sometimes nesting within the borough. Its speckled eggs weigh .7 oz.

*The Land-rail (*Crex pratensis* Bechstein). It is remarkable that whilst complaints of this bird's steadily diminishing numbers are reported every summer from most parts of the Kingdom, here in our district it is as common as ever. The probable explanation is to be found in the lateness of our hay harvest which enables the bird to hatch off her brood before the mowing machine destroys the eggs. Our earliest date for the arrival of the Corn-crake is April 22nd and it has been known to remain until September 14th, though not heard after August 10th. It *sings* all day and at any hour of the summer night. An egg weighs .51 oz.

The Water-Rail (*Rallus aquaticus* L.). Rarely seen, though certainly more common than is generally supposed. But it has not been known to nest within our district. In other parts of the country, I have found its nests in tufts of rushes growing *in* the water, as well as in such dry spots as one would expect to find the Redshank nesting. Eggs weigh from .42 to .47 oz.

(To be continued).

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Among the contents of *The Journal of the Quekett Microscopical Club* for April, we notice a New Incandescent Light for Microscopical Illumination, by A. Ashe; Observations on Capillitia of Mycetozoa, by A. E. Hilton; The Use of Amylic Alcohol and Sandarac in Microscopy, by T. E. Wallis; A New Form of Polariser, by E. M. Nelson; The President's Address:—Some Cases of Adaptation among Plants, by A. B. Rendle; Hydracarina: The genus *Oxus*, by C. D. Soar; and *Amphora inflexa*, a rare British Diatom, by G. West. Mr. Soar's article includes descriptions of *Oxus oralis* from Lincolnshire and *O. strigatus* from Cumberland.

THE SPIDERS OF YORKSHIRE.

WM. FALCONER,
Slaithwaite, Huddersfield.

(Continued from page 238).

Gen. *Lophomma* Menge, 3-5.

L. punctatum Bl.

Hygrophilous and common in many places in Great Britain and on the Continent; rare in Ireland, one locality; in moss and at the roots of grass and rushes in boggy ground. *Adult* throughout the year. First Record—R. H. Meade, Hornsea, 1854, S. G. B. I.

V.C. 61.—Hornsea, one ♀, R. H. M.; Sandholme, Risby, Kelsey Hill, Kelleythorpe, cliffs north of Bridlington, T. S.; Pulfin Bog, E.A.P.; not in any quantity at the above localities; more numerous Riccall, and Skipwith Common, W. P. W., W. F.

V.C. 62.—Eston, J. W. H.; Scalby Beck and Ringingkeld Bog.

V.C. 63.—Hurst Wood and Naylor Rough (Shipley), W. P. W.; Linthwaite, in a dry barn; common in the Slaithwaite and Marsden districts; Dean Head; Chew Valley (Greenfield); Marsden and Ramsden Cloughs (Holmfirth); Meltham; Carr Wood, Woodsome; Coxley Valley.

V.C. 64.—Bishop Wood, T.S.; Adel Bog; Brim Bray (Sawley).

L. herbigradum Bl.

Abundant in many parts of England; rare in Scotland; absent from Irish list; abroad, Sweden, France, Hungary, Bavaria, Italy; among grass, heather and fallen leaves in both dry and moist situations. *Adult* throughout the year. First occurrence—the author, Slaithwaite, June, 1897.

V.C. 61.—Carey chalk-pit, near Willerby, Hornsea Mere, Bielsbeck, Flamborough Head, Houghton Woods (Market Weighton), Weedley, ♂, T. S.; Hesslewood, E. A. P.

V.C. 62.—Cleveland, 'every locality visited,' J. W. H.; Thornton Dale, R. A. T.; Scarborough Mere, Saltburn, Marske.

V.C. 63 and 64.—Generally distributed and common, especially abundant in the Colne and Calder drainage.

V.C. 65.—Y.N.U. Upper Teesdale; Cautley and How Gill, W. P. W.

L. subæquale Westr. (*Tapinocyba subæqualis* Westr. and *Cnephalocotes fuscus* Camb.).

A rare spider, noted for Hants., Sussex, Cambs., Northants., Lancashire, Cheshire, Staffs., Northumberland; Banff; Dublin; foreign distribution uncertain as it has been confounded on the Continent with *L. laudatum* Camb.; amongst grass and herbage. *Adult* ♂, April to August; ♀ throughout the year. First occurrence—the author, Ram Clough, October, 1903.

V.C. 61.—Saltend Common, one ♀, E. A. P.; Mt. Airey, S. Cave, one ♀, T. S.

V.C. 63.—Head of Ram Clough, Wessenden Valley, Marsden, six ♀s; Holthead, near Slaithwaite, in old steep stony lane leading to the 'Dyers' Arms,' one ♂, six ♀s, October, 1904.

V.C. 64.—Birkham Wood, Knaresborough, one ♀, April, 1906.

Gen. *Thyreosthenius* Sim., 1-1

T. biovatus Camb.

A myrmecophile, living in the nests of the wood-ant, *Formica rufa*; widely distributed in Great Britain; Surrey, Sussex, Dorset, Hants., Devon, Staffs., Durham, Northumberland, Cumberland; Inverness; abroad, France, Germany, Holland. *Adult*: ♂, May to August; ♀s throughout the year.

V.C. 63.—Denby Dale, near Huddersfield, an adult ♂, August, 1912.

Gen. *Evansia* Camb., 1-1.*E. merens* Camb.

A myrmecophile discovered at Glenfarg (Perthshire) in 1899; since found associated with *Formica rufa* at Carlisle, Barmouth and in Tynedale, and with *Donisthorpea nigra* in Glamorgan and Durham; recently on Hill of Howth (Leinster), south of Scotland and Keighley taken wandering at large. In Yorkshire it associates with both these ants and in Cleveland also with *L. umbratus*. Two other myrmecophile species, *Cryphoea diversa* Camb. and *Tetrilus arietinus* Thor. (if not the same), frequent the nests of *F. rufa* and may occur in our area. *Adult* ♂, spring and autumn, ♀s throughout the year. First occurrence—the author, Drop Clough, May, 1906.

V.C. 62.—‘Everywhere in Cleveland with both ants, quite melanic on Redcar coast,’ Gt. Ayton with *Lasius umbratus*, J.W.H.

V.C. 63.—All with *D. nigra*: Drop Clough, Marsden, several of both sexes; Helme (Meltham), 1♂, 1♀; Crosland Moor, Huddersfield, 1♂, 4♀s; Sun Dean, ♀s; Chew Valley, Greenfield, 2♂s.

V.C. 64.—Rivock near Keighley, at large beneath bracken, W.P.W.; Grassington, 1♂, 2♀s, R.B.

Gen. *Walckenaera*, 5-5.*W. acuminata* Bl.

Widely distributed in the British Isles and on the Continent; commoner in the north than in the south; amongst grass, fallen leaves, moss, etc., and under stones, both in dry and moist situations, open ground and woods. *Adult* ♂ mainly in autumn; ♀s until spring. First record—Yorkshire, S.G.B.I., R.H.M., Bradford, V.C.H.

V.C. 61.—Humber Bank, between Hull and Hessle, Skidby, Houghton Woods, Leconfield, Riplingham, Bielsbeck, Filey cliffs, Brantingham Dale, Sunk Island, Saltend Common, Snake Hall, South Cave, Holme-on-Spalding Moor, T.S.; Riccall Common, T.S., W.F.

V.C. 62, 63, 64.—Common and widely distributed.

V.C. 65.—Y.N.U., Upper Teesdale.

W. obtusa Bl.

A very rare British spider recorded from Dorset, North Wales, Cheviots, Northumberland and County Durham; abroad—Hungary, Bavaria and Switzerland.

V.C. 63.—Calverley, 1 adult ♂, S.M., May, 1909.

W. nudipalpis Westr.

Not a common spider, though now on record for Scotland as far north as Forres and St. Kilda, Ireland, and a dozen widely separated English counties; abroad—Sweden, Denmark, Prussia, Poland, North Hungary, Tyrol and North France; amongst moss, grass spring. First occurrence—the author, Isle of Sky, October, 1898. roots, under stones, etc.; usually in damp ground. *Adult* autumn to

V.C. 61.—Hornsea Mere, ♀s, Houghton Woods, ♀s, Weedley Springs, ♀, Wilberforce House and New Joint Dock (Hull), ♀s, T.S.; Skipwith and Riccall Commons, 1♀ at each place.

V.C. 62.—Cleveland, ‘every locality visited,’ J.W.H.; Eston.

V.C. 63.—Hurst Wood, Shipley, 1♀. W.P.W.

Numerous localities about Huddersfield, Colne Valley, Saddleworth, Greenfield, Holmfirth, Honley, Brockholes, Woodsome, Shepley, Meltham, Lepton, but not in any quantity; Deffer Wood (Cawthorn); Crimsworth Dene.

V.C. 64.—Thorparch; Adel Moor and King’s Wood; Alwoodley; Ingleborough, near the summit.

V.C. 65.—Y.N.U. Upper Teesdale, Winch Bridge.

W. capito Westr.

A very rare British spider, noted for Dorset, 1 ♂, North Wales, Paisley, ♀, Sca Fell, ad. ♀, imm. ♂, Ben Nevis, ♀, Cairntoul, ♀; ♀ not yet certainly apportioned to the male known by this name.

V.C. 64.—Ingleborough, on the summit, 1 adult ♀, under a small flat stone, 14th June, 1913.

W. nodosa Camb.

Also very rare; reported from Dorset, Staffs., Northumberland and Cumberland, and from Monaghan, 1 ♀, Ireland; abroad, North France.

V.C. 64.—Ascent of Ingleborough, immediately above Clapdale, 2 adult females, in swampy ground, 14th June, 1913.

Gen. *Wideria* Sim., 3-4.

W. cucullata C. L. Koch.

A local spider found in woods, but sometimes plentiful where it does occur, noted for Dorset, near London, Essex, Sussex, Staffs., Cumberland and Northumberland; the Trossachs and Rothiemurchus Forest in Scotland; abroad, Sweden, France and Central Europe; amongst fallen leaves. *Adult* autumn to spring. First occurrence—the author, Butternab Wood, October, 1902.

V.C. 61.—Market Weighton, on the road to Holme-on-Spalding Moor, 1 ♀, Houghton Woods, 4 ♀s, T.S.

V.C. 63.—Cottingley Wood, 1 ♀, Hurst Wood (Shipley), 1 ♂, 1 ♀, W.P.W. Both sexes plentiful at Butternab Wood, Honley Old Wood, Woodsome, Smith Wood and Storthes Hall Wood (near Huddersfield), Hardcastle Crags and Hebden Bridge, Deffer Wood (Cawthorn). Less commonly at Drop Clough, Armitage Bridge and Lower Stones Wood; Maltby, 1 ♀.

V.C. 64.—Adel Moor and King Wood, several females.

W. antica Wid.

Widely distributed in the British Isles and on the Continent; but in unequal quantity; amongst roots of grass, heather and herbage, moss, fallen leaves and beneath stones. *Adult* in autumn, ♀ on to spring. First occurrence—the author, Drop Clough, July, 1899.

V.C. 61.—Humber Bank West, Brantingham Dale, T.S.; Skipwith Common, and river bank above Selby, 1 ♀ at each; Skeffling, 1 ♀.

V.C. 62.—Cleveland, 'every locality visited,' J.W.H.; Scarborough R.A.T.; Marske; Ringingkeld.

V.C. 63.—Cusworth, T. S.; Harden, W.P.W.; on the moors, in the cloughs and woods about Slaithwaite, Marsden, Saddleworth, Greenfield, Honley, Meltham and Huddersfield, not uncommon; Holme Moss and Holmfirth.

V.C. 64.—Bolton Woods, W.P.W.; Ilkley, Sawley High Moor, Adel Moor, Stubbing Moor, Boston Spa; Heath, near Wakefield.

W. fugax Camb.

A very rare British spider recorded from Dorset, Burnham Beeches, Nottinghamshire, Cambridgeshire, Staffordshire, Cheshire and Northumberland, but not yet from either Scotland or Ireland; abroad, France and Central Europe; amongst moss and at roots of grass. *Adults*, both sexes, taken from autumn to spring. First occurrence—the author, Drop Clough, December, 1902.

V.C. 62.—Raincliff Woods, 1 ♂, R.A.T.

V.C. 63.—Drop Clough, Marsden, 4 ♂s; Bottoms Wood, 2 ♂s, 2 ♀s and Scout Wood (Slaithwaite), 2 ♀s; Wessenden Valley, in wood on slope above Butterley Reservoir, 2 ♀s; Butternab Wood, 1 ♂, 1 ♀, and Mollicar Woods (Huddersfield), 1 ♂; Deffer Wood (Cawthorn), 1 ♀.

Gen. *Prosopotheca* Sim., 2-2.*P. monoceros* Wid.

A rare spider occasionally taken as at Weston-super-mare, Southport, Rye, Aberavon, North Berwick and in Yorkshire near the sea, or as in Northumberland, Cumberland, Staffordshire and the Huddersfield district on high inland moors; abroad, Sweden, France, Germany, Tyrol and Switzerland. *Adult* autumn to spring. First occurrence—the author, Crosland Moor, September, 1903.

V.C. 61.—Spurn, 1 ♀, and in a beech wood at South Cave, 1 ♂, 1909, T.S.

V.C. 63.—Crosland Moor, Huddersfield, 4 ♂s, 14 ♀s, all from heather on various dates.

P. incisa Camb.

Two previous examples only, both females, one at Llanrwst, N. Wales, 1860, under a stone, and the other near Paris.

V.C. 61.—Birkhill Wood, Cottingham, 1 adult ♀, June 5th, 1915, T.S.

Gen. *Cornicularia* Menge, 4-5.*C. cuspidata* Bl.

Widely distributed in the British Isles and on the Continent; amongst roots of grass and heather, dead leaves and moss, oftenest in damp places. *Adult* autumn to spring. First record—Yorkshire, S.G.B.I.; Bradford, R.H.M. (V.C.H.). Widespread and usually common in Yorkshire, the recorded stations in V.C. 62, 63, 64, being numerous. It appears to be more uncommon in V.C. 61, North Cave, Swine Woods, Barmby-on-the-Marsh, Hull Bank, Hull, Newland, Coniston Coppice, Hall Ings and Birkhill Wood (Cottingham), Beverley Long Lane, T.S., probably from the lack of suitable habitats in a more highly cultivated and drier area.

C. unicornis Camb.

Less common than the last, on record for a dozen widely separated English counties as far north as Northumberland, and two Irish localities; abroad, Sweden, France and Central Europe; amongst grass, furze and heather débris, usually not rare where found. *Adult* autumn to spring. First occurrence—the author, Dalton Lane, May, 1903.

V.C. 61.—Kelsey Hill, Pulfin Bog (Beverley) and Spurn, T.S., E.A.P.; Patrington Haven, Withernsea Carrs, Market Weighton, Bielsbeck, Snake Hall, Welwick, T.S.; Riccall and Skipwith Commons, W.P.W., W.F.; Scampston,

V.C. 62.—Cleveland, 'every locality visited,' common, J.W.H.; Forge Valley, South Cliff (Scarborough), and Langdale End, R.A.T. Ringingkeld Bog; Marske; Tees mouth.

V.C. 64.—Linton Common, Stubbing Moor, Dalton Lane, East Keswick, Adel Moor, above the seven Arches, and Brim Bray (Sawley), but not in any quantity; Chandler's Whin, York, many of both sexes.

(To be continued).

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We learn from *The Yorkshire Post* that 'a notable student of the natural history of Cumberland and Westmorland has passed away in the person of Mr. Samuel Oglethorpe, of Penrith, at the age of 65. He had been in business as a watchmaker for forty years, and was the last of a long line of craftsmen. His hobby for the greater part of his life-time was entomology, and he had a remarkable collection of moths and butterflies, all of which he had taken in Cumberland and Westmorland.'

YORKSHIRE NATURALISTS AT RYHILL.

THE excursion fixed for Thursday, May 15th, proved very popular, quite a large assemblage of nature enthusiasts taking advantage of the Union's first visit to Ryhill, near Wakefield, and enjoying immensely the resplendent birth of springtime and the scenic charms along the traversed routes. The effect of the period of warmth was best evidenced in hedgerow and woodland; aquatic plant-life had not been so rapidly stimulated to growth. One party met at Walton, and proceeded along the canal path to the grounds of Walton Hall, finding much of interest en route, especially in birdlife, and before leaving visited the grave of that famous Yorkshire naturalist, Charles Waterton. They next passed through Haw Park Wood (which has been thinned of practically the whole of its best commercial timber, and partially replanted with Larch), to the reservoirs, meeting the party arriving from the direction of Nostell. The wood and the reservoirs provided a happy hunting ground until adjournment was necessary for tea at 'The Cottage in the Wood.' Dr. Corbett presided over the meeting held at the close of the excursion, when six new members were elected and the usual sectional reports were given.—W.E.L.W.

VERTEBRATE ZOOLOGY.—Mr. W. H. Parkin writes:—The grounds of Walton Hall would send the thrill through any bird lover, to roam once more about the place where Charles Waterton spent so many happy hours watching the birds, out of little shelters fixed for that purpose, long before the photographer with his tent came along for similar work. All were very much alive on that perfect day and not a man amongst us but will remember it with 'better feelings than we set out.' Old Waterton, to quote him more fully, said: 'when the vexations of the world have broken in upon me I go away for an hour or two amongst the birds of the valley, and I seldom fail to return with better feelings than when I set out.'

And once more we stood, perhaps, on the very spot, and saw the birds around us, the Jackdaws flying from the same buildings, nesting in the same old crannies; Great Crested Grebes in their full summer beauty diving as only Grebes can dive, their long thin necks showing off the profuse crests or tippits to perfection. We note too, the appearance of the half-submerged bodies and the difference in the water from other water fowl when swimming. The nest was placed only a few feet out on a broken drooping branch of a willow, well in the water. Not far away a Coot had also selected its nesting habitat and the seven eggs were plainly visible. A few Canadian Geese were also on the lake. It is almost a pity these birds should be introduced for they interfere more or less with the wilder associations and surroundings.

In the small scrubby plantation we heard those charming songsters, the Garden Warbler and the Blackcap Warbler. The Common White-throat was nesting, but we failed to see or hear the Lesser Whitethroat. Wagtails were well represented by the Pied, Grey and Yellow species. A Magpie had built its nest very low down, ten feet from the ground; other nests of this species were seen and it is as well to note on the marked increase of this bird during the last four years.

Whilst the party were resting on the bridge at the bottom part of the lake a Kingfisher reviewed itself before us. In one of the holes in an old oak was a nest of a tit, and on investigation a quantity of duck's down was found which seemed to be that of the Tufted Duck, but this latter bird was not seen. A Turtle Dove was heard in the coppice, and its nest was located, but not examined. The Wood Pigeon and Stock Dove were also noted.

Willow Warbler, Tree Pipits, Redstart, Blue, Great and Cole Tits, and Lesser Redpolls were all seen as well as many of the commoner species. The Chiff Chaff was not heard nor seen as far as could be ascertained.

Yet twenty years ago there were a few pairs here and this bird is fairly constant in its well-established habitat.

CONCHOLOGY.—Messrs. J. Digby Firth and Mr. J. A. Hargreaves write :—The leaders of this section were ably supported by Messrs. Thornes, Lumb and several members of the Doncaster Scientific Society. Twenty-four freshwater and ten land species were taken, the scarcity of the latter being probably due to the dry weather.

The following is a complete list of species taken, with the exception of the Pisidia, which have not yet been determined :—

Agriolimax agrestis.
Hyalina allivaria.
H. nitidula.
Euconulus tulvus.
Arion ater.
A. hortensis.
Pyramidula rotundata.
Hygromia hispida.
Cochlicopa lubrica.
Succinea putris.
Acroloxus lacustris.
Limnæa auricularia.
L. pereger.
L. palustris.
L. truncatula.
L. stagnalis.
L. glabra.

Planorbis albus.
P. carinatus.
P. umbilicatus.
P. vortex.
P. spirorbis.
Physa fontinalis.
Aplecta hypnorum.
Paludetrina jenkinsi.
 and var. *carinata*.
Bithynia tentaculata.
Vivipara vivipara.
Neritina fluviatilis.
Dreissensia polymorpha.
Unio pictorum.
U. tumidus.
Anodonta cygnæa.
Sphaerium corneum.
Pisidium? (two or more species).

HYMENOPTERA.—Dr. H. H. Corbett writes :—In a district that was worked by the late F. Smith new records were not likely to occur. On a sandy bank by Ryhill Reservoir were *Nomada alternata*, *Andrena albicans*, *A. minutula* and *Halictus rubicundus*. On a sunny bank beside the road that skirts the reservoir were *Nomada alternata*, *Andrena cineraria* and *Sphecodes* sp.? On flowers of *Scilla festalis* in Haw Park Wood were *Bombus latreillellus* v. *distinguendus*, *B. hortorum* and *B. terrestris*.

PLANT GALLS.—Mr. W. Falconer writes :—The foliage just being newly unfolded, no fresh galls were noted but only old ones of the following :—HYMENOPTEROUS, *Andricus curvator* Hartig, 'curved twig,' in plenty on an oak tree en route from Sandall to reservoirs. DIPTEROUS, *Rhabdophaga salicis* Sch. on sallow, one bush only, Wintersett reservoir (flies emerged in mid-May); *Perrisia crataegi* Winn, remains plentiful on hawthorn hedges.

LEPIDOPTERA.—Mr. B. Morley writes :—Butterflies were represented by a few *Vanessa urticae* and the three species of common *Pieridea*. A specimen taken of *P. napi* had a strikingly asymmetrical underside, the right side being typical, but with the ground colour of the under wing very yellow and with strong green veins, while the left side has the upper half similarly coloured but the lower half has a white ground and grey veins. Of Moths, *Tephrosia biundulata* was most noticeable by reason of the great inconsistency of colour, ranging from extreme light through various intermediate shades to the dark *delamerensis* form. *Panagra petraria* was common among the dead bracken. The commonest species by far was the pretty little *Heliozele sericiella* which flew in swarms around almost every mountain ash, and the equally pretty *Lithocolletis quercifoliella* about oak. Other species seen were *Nemophora swammerdamella*, *Coccyx argyraea*, *Dasycera sulphurella*, *Micropteryx subpurpurella*, and a welcome pair of *Coccyx splendidulana*.

COLEOPTERA.—Dr. Fordham reports :—The Coleopterists present were Mr. E. G. Bayford, Dr. Corbett, Mr. A. E. Thornes and the writer, who were ably assisted by Mr. Falconer, who collected fourteen species at

Wintersett and seven at Cold Hiendley. Forty-four species altogether were noted—*Blethisa multipunctata* L. occurred in fair numbers in one part of the margin of the Reservoir, together with an abundance of *Elaphrus cupreus* Duft, *E. riparius* L., *Agonum marginatum* L. and *Bembidium dentellum* Th. (*flammulatum* Clair).

Other noteworthy species were :—

Pterostichus anthracinus Ill. R. Several.

P. macei Marsh (*picimanus* Duft). R.

P. minor Gyll. Cold Hiendley.

Agonum viduum Pz. var. *moestum* Duft. R.

A. piceum L. R. Wintersett.

A. fuliginosum Pz. R. Wintersett. Cold Hiendley.

Amara communis Pz. R.

A. plebeia Gyll. Wintersett.

Bembidium gilvipes Stm. Wintersett, Cold Hiendley.

Dromius melanocephalus Dj. Wintersett.

Staphylinus pubescens De G. R.

**Lathrobium quadratum* Pk. R. Wintersett.

Coccinella hieroglyphica L. R.

Œceoptoma (*Silpha*) *thoracicum* L. Haw Park.

Xylodrepa (*Silpha*) 4 *punctata* L. Haw Park.

Rhagium mordax De G. (*inquisitor* Brit. Cat.). Haw Park.

*=New to V.C. 63. R.=Ryhill.

ARACHNIDA.—Mr. Falconer writes :—Collecting was not possible along the whole of the route traversed, and the time was mostly spent in sifting the withered or damp débris left stranded at high water mark at Wintersett reservoir, and only the species likely to be taken in such a situation were met with. Much of the material was immature and indeterminate; individuals were numerous, but there was little variety, the following being the species :—*Ēdothorax retusus* Westr., *Ē. fuscus* Bl., *Leptyphantes zimmermanni* Bertk., *Pachygnathus clerckii* Sund. (also Mr. Bayford), *Trochosa terricola* Thor., *Pirata piraticus* Clerck and an odd *Dictyna uncinata* Thor. The common scarlet earthmite, *Sericothrombium holosericeum* L., was plentiful at both reservoirs, also young *Ritteria nemorum* Koch., but only a few examples of *Gamasus crassipes* Linn. were noted.

BRYOLOGY.—Mr. J. W. H. Johnson, M.Sc., writes :—Messrs. W. H. Burrell, C. A. Cheetham and I represented this section and succeeded in finding the following species :—*Tetraphis pellucida*, *Catharina undulata*, *Dicranella heteromalla*, *Ceratodon purpureus*, *Weisia tenuis*, *Webera nutans*, *Mnium hornum*, *M. punctatum*, *Plagiothecium denticulatum*, *P. latebricola*, *Hypnum cuspidatum*, *H. cupressiforme*, *Scapania dentata* (Haw Park Wood), *Scapania undulata* (Walton Park).

—: o :—

The Geology of the Refractory Materials of the North of England, by J. B. Atkinson and J. T. Stobbs, is the title of a paper in *The Quarry* for July.

A report having appeared that a solid block of limestone weighing 300 tons, quarried at Wirksworth, Derbyshire, was 'the largest block of limestone ever quarried in this country,' Mr. J. N. Wilson reports in *The Quarry* for July that a block weighing 320 tons was recently quarried at the Little Orme's Head Limestone Quarries, North Wales.

British Birds for July contains notes on Norfolk Bitterns, by Emma L. Turner; Pied and White Wagtails, by H. F. Witherby; the Drumming of Woodpeckers, by J. S. Huxley, and the Birds of Bardsey Island, by N. F. Ticehurst. Among the short notes is one on Fulmar Petrels in Yorkshire, in Summer, in which a pair of Fulmars is recorded at Speeton, and we agree that 'whether the birds are actually breeding remains to be proved.'

In Memoriam.

WILLIAM ERNEST SHARP.

1856-1919.

By the sudden death of Mr. W. E. Sharp, F.E.S., at Crowthorne, Berks, on May 20th, at the age of 63 years, northern Coleopterists have lost a valued friend and helper. Well known personally to most of the members of the Yorkshire Coleoptera Committee, Mr. Sharp was always ready to assist in identifying their more critical captures, and his remarks on the specimens submitted contained valuable observations on structure and habits drawn from his own personal experience.

A native of Cheshire, he resided in that county until he took up his residence in 1898 in the neighbourhood of London, retiring from thence when compelled by failing health in 1913 to the pleasantly situated village of Crowthorne.

During his residence near Liverpool he was a prominent member of the Lancashire and Cheshire Entomological Society, and compiled a list of the Coleoptera of those counties, which it published in 1908. This contains many interesting notes on the 45 per cent. of the British Coleoptera recorded for the two counties, and forms a valuable contribution to the study of the distribution of British beetles, a subject upon which he spoke with authority; his conclusions being quoted by Dr. Scharff in his work on the Distribution of European Animals.

Mr. Sharp was elected a Fellow of the Entomological Society of London in 1902, and at one period served on the Council of that body. *The Naturalist* for 1892 contains an article by him on the Hydradeptera of Lancashire and Cheshire. After he left Cheshire for the Metropolis, his business activities frequently brought him into the North, and on these visits he managed to spare a little time for his favourite study in the company of one or other of his numerous friends. The writer has pleasant memories of several week-ends spent together in East Yorkshire, and his suggestions resulted in the addition of many species to the County List. An article from his pen on the Coleoptera of Bishopdale, Yorks., will be found in *The Naturalist* for 1913.

In 1913, together with Mr. E. A. Newbery, he compiled a list of British Coleoptera, bringing the nomenclature of the order into line with continental usage—a change that at the time appeared somewhat drastic, but which has now become almost universally adopted.

Mr. Sharp was a man of artistic temperament, combined with a scrupulous regard for scientific exactitude. His letters and numerous writings in our entomological periodicals and elsewhere were scholarly, and some of his descriptive pieces remind one of the word-pictures of another coleopterist dear to Yorkshiremen—the late Rev. W. C. Hey.

A few years ago, he published a book on "Common Beetles of our Country Side," designed primarily for all nature lovers, but unlike some 'popular' nature study books, a book which every real student of the order can read and delight in, and the matter of which is accurate and clothed in attractive language.

At Crowthorne he delighted to entertain his friends and shew them the specialities of the district, and the writer will ever remember the hours spent in his company, whether in the woodlands round the village or with a pipe in the evening over his collection, books and water-colour sketches—for he was an artist of no mean ability. On the occasion of one of his visits to the writer he had left his tobacco pouch with another north-country coleopterist, who returned it promptly with the label '*Marsupium oblitum* var. *Sharpi*.'

His articles on the Coleoptera of the parish in the *Entomologist's Monthly Magazine* have made Crowthorne classic ground; the rarities, *Pterostichus angustatus*, *Agonum 4 punctatum* and 6 *punctatum* and *Melanophila acuminata*, being among the aristocrats of its beetle inhabitants. Mr. Sharp by no means confined his attention to beetles, other orders, including Hemiptera, coming under his notice, though the greater part of his published work relates to the Coleoptera.

Space will not permit of a complete bibliography of his writings, but sufficient has been said here to indicate what a loss his death has been to all those to whom he had endeared himself so much by his unfailing geniality and whole-hearted friendship.—W. J. F.

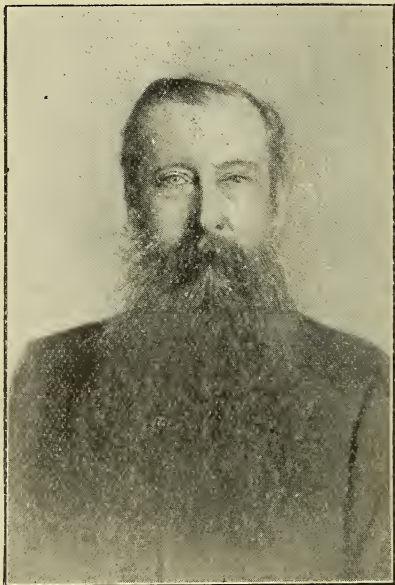
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H A PAYNTER.

1846-1919.

It is with extreme regret we have to record that Henry Augustus Paynter passed away at Yeovil, Somerset, on May 16th, at the age of 73. Many of us, members of that very successful and old established wild birds' protection society, known as the Farne Islands Association, have vaguely wondered whatever would become of it, if anything should happen to Mr. Paynter. He was the life and soul of the Association, and besides being honorary secretary and treasurer he might almost be called sole manager. He dearly loved the work and ALL the birds. At times when the writer has suggested a reduction in the numbers of the Lesser Black-backed Gulls that nest on the islands by pricking their eggs (in the interests of other species) he would listen most respectfully, but always took care not to have it carried out! Again in 1917 and 1918 when we suggested sending the Gulls' eggs to the larger towns to assist the food supply during the war, he could not bring his mind to such a wholesale measure—his love for the birds was too great.

Mr. Paynter was one of the original members of the Farne Islands Association on its formation in 1881, and for the past thirty years he has acted as its sole honorary secretary and treasurer—issuing yearly reports to the subscribers. He was a solicitor by profession, and although he had the appearance of a typical Northumbrian—standing well over six feet in height—he was really a Cornish man by birth—being born at Penzance on April 2nd, 1846. But he had lived and practised



for a great number of years at Alnwick. This Spring, after a severe illness, he was ordered to the South of England, but he delayed going until he could make some arrangements for his beloved birds, and probably thereby hastened his end. His remains were laid to rest on May 20th, in the little churchyard of Lufton, near Yeovil, where many of his relatives are also buried.

Fortunately for the Farne Islands Association, and more particularly for the birds that nest on the islands in such vast numbers, Mr. Collingwood F. Thorp, another Alnwick Solicitor, has taken over the work as honorary secretary and treasurer, and the bird-watchers are on the islands as usual this season. —H.B.B.

—:o:—

A well-known bookseller's catalogue recently offers *The Floral Magazine*, *Figures and Descriptions of Popular New Flowers* 'for the Garden Stove and Controversy'!

FIELD NOTES.

BIRDS.

The Greenfinch's Nest.—Howard Saunders rightly says the nest of *Ligurinus chloris* Linn. is commonly a rather loose and slovenly structure. It usually is, but there are some pretty exceptions, and I came across one at Howsham to-day. Children had wantonly pulled it out of a garden bush, just after it was finished, but before any eggs were laid. It was a beautifully regular construction of grass and other garden roots, moss, fowls' smaller feathers, very old, much weathered and falling-to-pieces string. It had an inner lining not of boar's, but of Lincolnshire curly white Pig's hair. In the winter and spring this hair, after pig-killing, is thrown away on the ash-heaps of our villages. Later on the Greenfinches may be seen gathering it as the final lining of their nests.—E. ADRIAN WOODRUFFE-PEACOCK, Cadney, Brigg, 25th May, 1919.

It is no uncommon event to find a really tidy and compact Greenfinch's nest.—R.F.

—: o :—

Nightingales in Shropshire.—The present is quite a 'Nightingale Year,' in Shropshire. The species occurs regularly every year in the Severn Valley as far northwards as Iron Bridge. Further north and west its occurrences are irregular, but every now and then comes a season when the Nightingale seems to bound forward in a north-westerly direction. At first I thought that the species was extending its range into North Wales, but an experience of 25 years during which I have kept records, shows that such is not the case. The nightingale's range here is limited to the area mentioned above, and the occasional overstepping of the boundary is only temporary. An interval of five or six years generally elapses between one 'Nightingale Year' and the next. During the present season one of these songsters took up quarters in the outskirts of Shrewsbury itself, to the delight of the local residents who could listen to it while snug in bed. Two others were located within a mile of the town, and others further off. But the most noteworthy occurrence was a bird which I heard myself at Middletown, exactly on the borders of Shropshire and Montgomeryshire, on 22nd May. This is a most unusual locality, and I was not aware that the Nightingale had ever visited it before. A local resident, however, informed me that about five years ago there were two in the same neighbourhood—one about half-a-mile off and the other about a mile on the Welshpool road. As all the birds mentioned remained constantly in one spot there is little doubt that each had a mate nesting

there. I have several times known males to come to a spot and sing for a night or two, and then disappear. These were evidently without a mate.—H. E. FORREST.

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ENTOMOLOGY.

Cucullia verbasci near Bingley.—Referring to Mr. Porritt's note in *The Naturalist* for August, 1918, (page 268) and Mr. Carter's note (page 288) when at Eldwick on the 20th June last, I was asked to inspect some caterpillars which were feeding upon a cultivated variety of figwort in a garden. I found them to be what I take to be *C. verbasci*, in two or three various stages of growth, three or four larvæ of which I brought home of the largest size which are almost now (July 9th) full fed. I have never previously taken this species in this district; indeed the 'sharks' are comparatively scarce in this neighbourhood. *Cucullia umbratica* was fairly common here in the year 1899.—E. P. BUTTERFIELD, Bank-House, Wilsden, near Bingley, July 19th. 1919.

Larvæ of *C. verbasci* have again occurred freely here this year, in Mrs. Whiteley Tolson's garden at Dalton. The species is evidently thoroughly establishing itself in this part of the county.—G.T.P.

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ANNELIDA.

Cocoons of the Horse Leech.—On the 22nd of June, the Rev. W. W. Mason and I took some curious cocoons from under a log of carr-oak, lying by, but not in, the *Aplex hypnorum* pasture pond at Cadney. I sent some specimens, but not the largest, to the British museum, South Kensington. Mr. F. Jeffrey Bell replies to me 'The cocoons are undoubtedly those of a leech, perhaps of the horse-leech (*Aulostomum gulo*). But of this I cannot be quite sure; they are somewhat smaller than the cocoons of that species as figured by Mocquintandon.' I did not send the very largest, and as this and more of our ponds abound in Horse Leeches I have no doubt about the species. We have another rare spotted Leech (*Glossiphonia sexoculata*) in Cadney parish, but not in this pond. Fully forty years ago my brother, Max, in autumn, shot a duck from the *Elodea canadensis* pond at Yaddlethorpe, which was then perfectly isolated. On the feet of this bird when it fell were Horse Leeches and *Limnæa peregra*, both young; no doubt lifted from the pond, where it most certainly had been resting some hours, for it was 2-30 p.m. In this way our swimming and wading birds carry them.—E. ADRIAN WOODRUFFE-PEACOCK, Cadney, Brigg, 7th July, 1919.

CORRESPONDENCE.

Mr. A. E. Hall sends the following note :—‘ I have a copy of Thomas Martyn’s “ Figures of Non Descript Shells,” collected in the different voyages to the South Seas since the year 1764, published by Thomas Martyn and sold at his house, No. 16 Great Marlborough Street, London. Inside the volume is an autograph letter as under :—

‘ SIR,

As my great work of an Universal Conchology, exhibiting the figure of every known shell, daily grows under my hands, I feel myself more solicitous about the event. No labour, no expense, and no avocation shall deter, or divert me from the completion of this extensive design. But sickness, or other unforeseen misfortune, may retard the prosecution of it. A fire may destroy what is already finished, and death may prevent what yet remains to be begun. To guard therefore, in some measure against such accidents, I wish to deposit with some eminent person, equally distinguished for their taste and judgment in the fine arts, and sciences, a permanent and indisputable proof of the progress which I had made previous to the publication of my first volume. That volume will afford sufficient specimen of the first part of my plan, comprehending the non descript shells from the South seas, and the collection of paintings which I have now the honour to present to you from my 5th, 6th, 7th and subsequent volumes, are designed as an example of the same superior manner in which I propose to execute those subjects of Conchology that have been already described. To these monuments of my exertions in Natural History, I cannot make choice of a more proper Trustee than Sir William Hamilton, as possessing in a superior degree all those desirable qualifications so rarely united in an individual. The approbation with which you have been pleased to flatter me, gives me every reason to hope that you will deign to accept the trust. With all possible respect, I beg leave to subscribe myself,

Sir, your most humble and obedient servant,

THOMAS MARTYN.

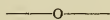
London : 25 King Street, Covent Garden,

September 1st, 1784.

SIR WILLIAM HAMILTON, K.B.,

His Majesty’s Envoy Extraordinary

and Plenipotentiary to the Court of Naples.

CAUSE OF MELANISM IN *PHIGALIA PILOSARIA*.

From the third week in February last to the beginning of March I paid many visits to Bingley Wood, along with my son, Rosse, and one or two of my friends ; our purpose being to secure a few dark specimens of this insect which was very abundant this year, perhaps more so than for the previous fifteen years, and fully fifty per cent. of those seen last February were dark—some very dark—and one which might have been termed black, the others were more or less approaching the type in colour, but nearly all were more or less inclined to melanism. When I first became acquainted with this species in the early ‘seventies of the last century and for a few subsequent years, I cannot remember having seen one very dark specimen, and it was not until the early ‘eighties that melanism began to show itself in any marked degree. What can be the cause of this sudden change which seems to have set at defiance all previous known laws which have been thought to be the cause of variation ; such as the influence of food, protective resemblance, hereditary transmission, natural selection, all of which seem to me inadequate to account for the above facts ? I rather incline to the belief that the cause of this melanism is to be attributed to retarded development owing to climatic conditions whilst

in the pupal stage.—E. P. BUTTERFIELD, Bank House, Wilsden, June 17th, 1919.

Exactly the same thing has occurred here, a proportion of the males being now uniformly ink black, and varying from this black, through dark to paler olive greens, up to the old mottled type forms. The females are now mostly perfectly black. Last Saturday I found the larvæ of the species in greater abundance in Lepton Wood than I ever remember to have seen them in this district. Some of the trees were almost defoliated, apparently chiefly by this species, and large numbers had no doubt already 'gone down,' as those I beat out seemed mostly full fed, and a number of those brought home had 'gone down' by next day, and during the next several days most had disappeared. I was not in the wood at the beginning of the year, but apparently the moth must have then been very common. But what does Mr. Butterfield mean by saying that he believes 'retarded development' to be the cause of this melanism? There is no retarded development, climatic or other, that did not apply to the species fifty years ago, just as it does now.—G. T. PORRITT, Huddersfield.

—: O :—

Dr. W. M. Tattersall, of the Manchester Museum, has been appointed Secretary of the Museums Association.

The *Report of the Norwich Museum for 1918* records the gift of a cabinet containing 600 bird skins collected by Mr. Hamon le Strange, in Mexico, in 1865-6, and three cabinets containing a representative collection of 4,000 Pliocene and Pleistocene Mollusca, a collection of 600 water colour sketches of plants made by the late Miss A. M. Barnard, and a collection of pre-historic remains found by the late W. H. Clarke.

We receive many curious communications from time to time. The following is the most recent from a lady in Kent:—'Sir no doubt you will be suprised to hear from me but last week I wrote to the Editor of *Tit-Bits*. Result an answer to the effect that he thought you would kindly help me I should be so glad if you would I must tell you about my trouble tho', I have a large *Aspidistra* (*sic*), which has had, as far as I know, every care, yet lately the leaves have started turning yellow at the tips I have not been able, by altering the possition of the pot, from the light to a darker place, to stay the fault, now Mr. Editor said he felt sure you could tell me, the cause, and what to do to remedy it, also could you tell me of any pot manures suitable for them. I am very fond of ferns and indoor plants and would not mind spending money on any good fertilizer suitable. I shall look eagerly forward to your reply (a stamp for which I enclose) and trust you will forgive my boldness in writing to you thanking you.—I remain, yours truly, Mrs. —.'

At the Annual Dinner of the Museums Association, held at Oxford, the first verse of 'Ye Peace Song of ye Savages,' read:—

Once again in bonnie Oxford
Do we pitch our moving tent
With its ancient seats of learning
Where the wicked ones are sent,
Where they teach them Bridge and Cricket
And a lot of little things,
And they turn them out like angels,
But they have not got the wings.

Fortunately there was present Sir Herbert Warren, Poet and Critic, and he amended the first few lines as follows:—

Once again in bonnie Oxford
We have found a pleasant pitch
With its ancient seats of learning
Where the wicked ones are *sich*!

Naturalist,



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EDITED BY

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THE MUSEUMS, HULL;

AND

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Contents :—

	PAGE
Notes and Comments :— British Association Report for 1918: Sunset and Soul-shine; The Selous Collection; <i>Lancashire and Cheshire Naturalist</i> ; Early Record of <i>Cypridium calceolus</i> ; Sir William Boyd Dawkins; Fossil Skulls, and Compression; Brachy- and Dolicho-cephalic; The Galley Hill Skull; British 'Oil-Pools'; Palæontographical Society; Illustrations; Preserving Plants in Formalin; South-Eastern Naturalists: The Bulletin	281-286
The Jew's Ear Fungus (<i>Hirneola auricula-judæ</i> Fr.).—Walter Johnson, F.G.S. ...	287-290
Fallen Blocks near Blea Wyke Point (illustrated)—F. G. Percival, B.Sc., F.G.S. ...	291-292
Bones of Bear from York (illustrated)—T. Sheppard, M.Sc., F.G.S.	293-294
New and Rare British Spiders (illustrated)—Wm. Falconer	295-302
Yorkshire Naturalists at Hawes —W.E.L.W.	303-308
Yorkshire Naturalists at Pateley Bridge —W.E.L.W.	308-310
Correspondence :— Undocked Dogs; Sounds that resemble the Songs and Calls of Birds... ..	311-312
Field Notes :— <i>Sorex gigas</i> in Sheffield; <i>Calosoma inquisitor</i> at Coniston; Lesser Shrew (<i>Sorex minutus</i>) in Cumberland; White Grouse Chick; Accident to a Skylark; Black-birds using the same nest twice	292, 294, 302
Reviews and Book Notices	310
Northern News	286, 312
News from the Magazines	312
Illustrations	291, 293, 295

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NOTES AND COMMENTS.

BRITISH ASSOCIATION REPORT FOR 1918.

The Report of the British Association for 1918 was issued in August, and like the 1917 volume is very 'thin.' We shall hope for better things next year. It contains the Report of the Corresponding Societies' Committee, already dealt with in these pages; the report of the Council and certain Committees of Research. We are sorry to see that this year the editors have reverted to the old-fashioned and inconvenient method of having two or more sections—each separately paged—a method which is not in the interests of the advancement of science. For instance '*Rep. Brit. Assoc. for 1918*, page 4,' may refer either to Seismological Observations; Colloid Chemistry; Publications for Sale; or (if written, 'iv.') a list of the Officers of the Association. We would suggest that the editors of this report act on the advice given to editors of Scientific publications generally, which they will find in their earlier volumes.

SUNSET AND SOUL-SHINE.

Nightly the setting sun irradiates

The western sky with his mote-spangled sheet

Of blue, green, gold and crimson—all too fleet!—

Blending his blue with the azure at heav'n's gates,

And with his crimson glory spread behind

The dark horizon throwing in bold relief

Masts, roofs and trees. . . Thus may the clouds his sheaf

Of many-coloured rays flaunt and unbind.

And as the perfect light of day each hue

In due proportion needs, so with the rays

Which from our souls around we daily spread.

Be mine no broken sheaf!—for could I shed

Beams that should pierce the fogs with crimson blaze,

Inviolat must they leave the tender blue!

Plymouth, 14th August, 1919.

WALTER GARSTANG.

THE SELOUS COLLECTION.

Mrs. Selous has offered to present to the Natural History Museum the magnificent collection of big game trophies formed by her husband, the late Captain F. C. Selous, D.S.O. The Trustees of the British Museum have accepted the gift and in due course the collection will be transferred from its present home at Worplesdon to South Kensington. It will be kept together as the 'Selous Collection' for a period of years, and we understand that the Trustees propose to prepare a special catalogue of the specimens. The collection consists of about 500 trophies of the chase, most of them unusually fine examples of their species. The greater part of the collection

is African, but there are also several heads of moose, wapiti, and caribou from Canada and Newfoundland, chamois from the Southern Carpathians, and wild goat from Asia Minor. Mrs. Selous' gift also includes Captain Selous' European collection of bird's eggs, one of the finest private collections of the kind in the kingdom.

LANCASHIRE AND CHESHIRE NATURALIST.

The first part of Volume XII. of *The Lancashire and Cheshire Naturalist*, with its new Editor (Dr. W. M. Tattersall) and new publishers (The Manchester University Press) is distinctly an improvement on its predecessors, though we must bear in mind that when Mr. Western commenced its publication in 1907, the price was one penny, whereas it is now ninepence. An editorial appropriately refers to Mr. Western's work, though we don't agree that he provided 'the only medium which Lancashire workers have at their disposal for the publication of their results.' Dr. Tattersall will find, if he enquires, that a journal called *The Naturalist* has been publishing valuable papers on the geology and natural history of Lancashire and Cheshire for about twice as long as he has been born, and is still prepared to print really important records dealing with those counties. Personally we should have thought a publication ostensibly dealing with two important counties would have been more scientifically valuable if it confined its records to those counties; but we notice the editor will consider 'any paper read before any of the local societies, even though the subject matter does not deal with our area'; and 'Madeira and its Flora' is the title of the first article in the new issue. We fear, however, that naturalists interested in Madeira will hardly think of consulting *The Lancashire and Cheshire Naturalist*.

EARLY RECORD OF *CYPRIPEDIUM CALCEOLUS*.

In the memoirs and proceedings of the Manchester Literary and Philosophical Society, Volume LXIII., Part I., is an interesting account of 'The Herbarium of John Dalton,' by R. S. Adamson and Alison Mc. K. Crabtree. The collection is contained in eleven volumes, and we note that 'among these is a very fine specimen of the now exceedingly rare Ladies' Slipper, *Cypripedium calceolus* (v. 14) from Arncliffe, Yorkshire. This specimen is undated, but as the volume contains most of the Manchester records, and as early in the next volume are plants dated 1797, it was in all probability before that date. If so, the record would antedate those given for this region in Lees' 'Flora of West Yorkshire,' where 1805 is given.' The note accompanying the specimen is 'Ladies' Slipper, from the Marshes about Arncliffe, in Craven. Presented to me by Nancy Wilson, of Thornton-in-Craven.'

The word 'locality' would fit the facts better than 'region' in the above account.

SIR WILLIAM BOYD DAWKINS.

Our sincere congratulations go to a past president of the Yorkshire Naturalists' Union whose name appears among the list of Knights, just published. Our readers know Sir William's many qualifications for the honour. The following are those given in the daily press:—'Professor William Boyd Dawkins, the distinguished geologist, has been in great demand as an expert in works of public utility, and among the problems he has had to deal with are those of the Channel Tunnel, the water supplies of some of the largest towns in the kingdom, the Manchester Ship Canal, and the Dover coalfield. His connection with Manchester began in 1869, when he was appointed curator of the Manchester Museum. A year later he became Lecturer on Geology in the Owen's College, and in 1874 he was appointed Professor of Geology and Palæontology. On his retirement in 1901 he was elected honorary professor, and his interest in the University has never flagged. His travels have been world-wide.'

FOSSIL SKULLS,

In *Man* for August, Dr. S. Hansen has an article on 'Posthumous Deformation of Fossil Human Skulls,' which should be carefully read by those interested in pre-historic human remains. He points out that: 'As a rule it is not possible to see whether a fossil skull has been compressed or not, nor how far the compression has gone. It is, however, a well-known fact that even thick, hard-baked pieces of pottery found with such skulls are not rarely compressed to such an extent that a similar compression of the skulls themselves is at all events highly probable.'

AND COMPRESSION.

Fossil skulls are usually found lying on their sides. They must, therefore, when compressed have a lesser breadth and a greater length than they had before death. The cephalic index must, in other terms, be reduced, and it can easily be shown that a considerable reduction may be due to a very slight compression. It is, as is well known, generally agreed that long or dolichocephalic skulls are those in which the greatest breadth is less than four-fifths, and round or brachycephalic skulls those in which it is more than four-fifths of the greatest length. Suppose, now, we have a skull measuring 180 mm. in length and 153 mm. in breadth, and suppose, also, that this skull, whose cephalic index is 85, has been compressed from side to side only 5 mm., and at the same time elongated equally 5 mm., you will then have a skull measuring 185 mm. in length and 148 mm. in breadth, and giving a cephalic index

of 80. Such very slight compression has thus turned a fairly round or brachycephalic skull into a mesaticephalic one.'

BRACHY- AND DOLICHO-CEPHALIC.

'If we take another skull, still brachycephalic, measuring 184 mm. in length and 152 mm. in breadth, giving a cephalic index of 82.6, and suppose it to be compressed in the same way to a breadth of 147 mm. and elongated to a length of 189 mm., giving a cephalic index of 77.8, then this skull has become a dolichocephalic one. I leave it to the reader to pursue the argument.

THE GALLEY HILL SKULL.

No doubt many fossil human skulls have been compressed far more than 5 mm., not to mention such a one as the famous Galley Hill skull, which was not compressed but crushed, and afterwards restored, with a quite phantastic length. I do not wish to exaggerate the importance of posthumous deformation, and the foregoing figures sufficiently prove that this importance is great enough for my purpose. A difference in cephalic index of about five units is considerable, and always, when true, indicates a clear racial difference. The extent of the compression depends, however, on the manner of burial. A corpse buried in loose soil will usually have the skull more compressed than one buried in a protecting chamber or cist, where the skull is perhaps not compressed at all. This means that a different cephalic index may be due solely to a different form of burial and, further, that a cephalic index of a living population greater than that of its ancestors in the same country may be due solely to a posthumous compression of the skulls of the latter.'

BRITISH 'OIL-POOLS.'

In *The Geological Magazine* for August, Mr. V. C. Illing refers to the recent 'discovery' of oil in Britain. He points out that the question 'of the possible occurrence of oil-pools in Great Britain . . . is essentially a geological one, and the British School of Geologists holds no uncertain views about the project, yet these views have been completely overshadowed by the insistent utterances of a few individuals.' Also, 'small quantities of oil and gas locally preserved among the impervious strata are both possible and probable. Such occurrences, however, are too small to be of commercial importance.' We are glad to find that Mr. Illing so forcibly supports the opinion we have all along expressed as to the fallacy of expecting large quantities of oil from British strata.

PALÆONTOGRAPHICAL SOCIETY.

Volume LXXI. of the Palæontographical Society's Memoirs contains further instalments of three valuable

monographs, as well as the Index to Volume I. of 'The Pliocene Mollusca,' by F. W. Harmer. The Secretary, Dr. A. Smith Woodward, completes his work on 'The Fossil Fishes of the English Wealden and Purbeck Formations,' and after very careful comparison concludes that the fishes of these formations are essentially Jurassic and not mingled with any typically Cretaceous forms. 'Most of them are, indeed, the specialised and evidently final representatives of the Jurassic families to which they belong, and very few can be regarded as possible ancestors of fishes which followed in Cretaceous and later times.'

ILLUSTRATIONS.

Mr. W. K. Spencer gives a further instalment of his monograph of British Palæozoic Asterozoa, in which new species are described, accompanied by figures showing extraordinary detail, and Mr. Philip Lake contributes Part V. of his 'Cambrian Trilobites.' The illustrations, as usual, are excellent, even Mr. Harmer's Index being accompanied by a view of 'Pit of Waltonian Crag at Little Oakley from which the author has obtained shells of about 650 species or well-marked varieties of Mollusca, besides upwards of 100 specimens [? species] of Polyzoa, etc.' With regard to the illustration of *Hybodus* from the Weald Clay (Plate XXVI., Fig. 3) we are glad this specimen has been described by a geologist, had it fallen into the hands of a 'pre-historian' it would surely have been introduced to the scientific world as a 'sculpture' of a hippopotamus, carved by palæolithic man.

PRESERVING PLANTS IN FORMALIN.

At a recent meeting of the Linnean Society, Miss M. Rathbone exhibited a series of specimens preserved by submitting them to the action of formalin vapour. She stated: 'Some years ago it occurred to me to try to find some method of preserving plants which would not destroy either their form or colour. I began by trying liquid paraffin, and this at first gave very promising results; but after a time the specimens became mouldy, and, if antiseptics such as salicylic acid were added, the colour disappeared. It then occurred to me to try formalin vapour, hoping that in this way the tissues of the plants might be hardened, and at the same time that the colour might be preserved. Unfortunately, the results have fallen far short of my ideal! The colour fades after a time, and the stalks and petals often become limp. However, in spite of these drawbacks, the method may have its uses, as, in plants preserved in this way, the microscopic characters of the tissues and the form of the flower and relationship of its parts are less altered than in dried specimens,

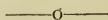
whilst for travellers specimens preserved in this way are lighter and more convenient to carry than plants preserved in spirit. I found that it was best to dilute the formalin with water, one part formalin to one or two parts of water and possibly an even weaker solution might answer. Cotton-wool soaked in this solution is put at the bottom of the bottle, or it may be tied round the stalks of the plants, enough being used to ensure a damp atmosphere. The bottles or boxes in which the plants are kept should be air-tight, and I found that candle-grease dropped over the cork answered very well.'

SOUTH-EASTERN NATURALISTS.

The South Eastern Union of Scientific Societies held its Annual Conference in London, June 11th to 14th, under the Presidency of Sir Daniel Morris. Arrangements had been made for the members to visit various places of antiquarian and general interest in and around London, and addresses were delivered by the President-elect, Dr. Arthur Smith Woodward, on 'Giant Reptiles of the Weald'; by Mr. L. W. Chubb, on 'The Woodlands of London'; by Dr. A. R. Rendle; by Captain A. W. Hill on 'Care of our Soldiers' Graves in the Military Cemeteries Abroad; and by Mr. R. A. Smith on 'Palaeolithic Remains in London.' Special interest was attached to the visits paid to the printing offices of some of the leading London daily papers.

THE BULLETIN.

Under the editorship of Mr. E. A. Martin, a daily Bulletin was issued, giving particulars of the various meetings and excursions, in addition to which the editor discoursed on various subjects connected with the Societies' meetings, gave biographies of the lecturers, and information of more or less general interest relating to such subjects as 'the recent find of Roman remains in Scotland,' 'Oil in Derbyshire,' and other matters on which presumably the members of the conference required information. We notice that in his account of the 'Reptiles of the Weald,' the editor refers to 'Flying Reptiles,' which landed 'Hawker-like' in the quickly flowing waters, 'and were not able to rise again.' We hope Mr. Hawker does not see this! We learn from Bulletin number 28, that a catalogue of the Union's books has appeared in *The Naturalist*, whereas, if we remember rightly, it was *The Naturalist* which criticised the unnecessary amount of type expended in the preparation of this catalogue, which appeared in another publication called *The South Eastern Naturalist*.



Dr. A. Smith Woodward has been elected a trustee of 'The Percy Sladen Memorial Fund,' in place of Sir John R. Bradford, who has retired.

THE JEW'S EAR FUNGUS

(*Hirneola auricula-judæ*, Fr.).

WALTER JOHNSON, F.G.S.

(Continued from page 258).

Occasionally the older name *Exidia* creeps in,* but more astonishing is the use of *Auricularia sambucina*—a curious revival and recombination—in a modern standard work on botany.† *Auricularia* is now, however, held to comprise those bracket-like fungi, silky and zoned above, in which the hyphæ are so interwoven as to form a coriaceous cap, and in which the inferior fertile surface is broken up like a honeycomb. True, *Auricularia* is gelatinous when moist, and horny when dry, like *Hirneola*, moreover the name means 'a little ear.' But the critical points of the fructification are different.‡

Linnaeus was plainly wrong, from our point of view, in accepting the Jew's ear as a *Peziza*, for this genus is now recognized as belonging to an entirely different order, the Ascomycetes, in which the spores are borne in tiny sacs, or asci. For the use of the name *Tremella* there was more reason, but there are numerous points which separate this genus from *Hirneola*. For instance, in *Tremella*, the cup is wavy, plaited, or foliaceous, the fertile surface covers the whole fungus, and a specimen, when handled, tends to deliquesce.

James Sowerby, who, in his three volumes issued between the years 1797-1809, gave beautiful illustrations of over 400 species, unfortunately does not depict the Jew's ear, hence his nomenclature is also lacking.

Fries, as already stated, at first termed the Jew's ear an *Exidia*, and this genus is more difficult to define. The soft cheesy substance of the members of this group, as exemplified in 'Witches' butter' (*E. glandulosa*), the irregular shape, and the papillations or warts which are sometimes found on the hymenium are distinctive points. § The minute warts or papillæ are sometimes observed on *Hirneola*, for Fries wrote, '*In disco nitido quoque observantur papillae minutissimæ sparsæ. Varia de hujus usu disserunt veteres.* || Yet Berkeley clearly states that the hymenium of Jew's ear lacks papillæ. ¶ The truth, so far as I can observe, seems to be that some specimens only have the warts, in other examples

* See W. Miller, 'Dict. of the Eng. Names of Plants,' 1884, p. 70.

† A. Kerner von Marilaun and F. W. Oliver, 'Nat. Hist. of Plants,' 1902, II., p. 687.

‡ Massee, 'Brit. Fungus-Flora,' I., pp. 53-58.

§ Massee, 'Brit. Fungi,' pp. 444-6.

|| 'Syst. Mycol,' I., p. 222.

¶ 'Outlines,' p. 289.

they are either absent or feebly developed. Exactly what were the features which led Fries to reconsider his nomenclature I do not pretend to know, but one assumes that the claims of *Hirneola* rest little upon priority, but much upon diagnostic features. The name for which Fries ultimately made himself sponsor was apparently, for the sake of euphony, modified from *hirnella* or *irnella* (=a little jug, probably the diminutive of *hirnea*, a jug).*

In one of his numerous works, Cooke consistently wrote the second part of the specific name, 'Judææ,' † but this retention of the *a* in the genitive is not justified, either in the Greek or the Latin form of the disciple's name.

VII.—POPULAR NAME AND FOLK-LORE. The popular name, 'Jew's ear,' were it not traceable backwards for several centuries, would naturally be considered merely as a stupid mistranslation of *Auricula judæe*, which obviously signifies 'Judas's ear.' The Latinized form of 'Jew' is *Judæus*, with its genitive *Judæi*, yet we found that Gerard, while using 'Judæ,' interprets it by the folk-name 'Jewes Eare.' Strangely enough, few writers have called attention to the discrepancy. Sir Thomas Browne, indeed, declares that the name 'concerneth not the nation of the Jews, but Judas Iscariot, upon a conceit he hanged on this tree. ‡ Rabelais, in 'Pantagruel,' has the correct rendering, when, in a list of salads, he speaks of '*d'aureilles de Judas (c'est une forme de fungus issans des vieulx suzeaulx [sureaux=elders])*.' § Mrs. Hussey carefully lays stress on 'Judas's ears,' || while Delisle Hay, after calling the fungus 'St. Judas Iscariot's mushroom,' adds 'Saint's Day, April 31st, (?). Appearing about this date is the Jew's Ear' . . . ¶ In another place he refers to the association of the fungus with Judas's ear as a 'monkish legend.'** The magnificent 'New Oxford Dictionary,' from which I have obtained several useful clues, calls attention, as might have been anticipated, to the confusion between the popular and the Latin names.

The name Jew's ear goes back at least a generation before the date of Gerard's great work, for Thomas Phaer, or Phaire, writing in 1560, speaks of 'the musherom yt groweth upon an elder tree called in englyshe Jewes eares (for it is indede croncled and flat, much like an eare'). ††

* I. J. G. Scheller, 'Lat. Dict.,' ed. Riddle, 1835; Short, 'Lat. Dict.,' gives also *hirnula*.

† 'Brit. Edible Fungi,' 1891.

‡ *Op. cit.*, I. p. 214.

§ 'Œuvres,' ed. Le Duchat and Le Motteaux, 1879, t. iv., p. 194.

|| *loc. cit.*

¶ 'Elem. Text-book of Brit. Fungi,' 1887, p. 228.

** *Op. cit.*, p. 133.

†† 'The Regiment of Life,' 1560, sig. T, j. page b.

Taking these references by themselves, 'Jew's ear' might appear to be the older name, yet other considerations, and notably those associated with the folk-lore of the elder, render it almost certain that a particular Jew, the traitorous disciple, was involved in the tradition. How and when the change was made is not known. Mr. Edward Step shrewdly suggests that the alteration occurred at one of the periods when Judenhetze, or persecution of the Jews was rife, and he asserts that an ear was no uncommon adornment of the ancient pillory.* The theory may well stand until a better is offered. At all events, the fungus was famous in ancient times, as noted by Fries, who observed that it had at length been illustrated by Clusius. (*Antiquitus celebrata, jam à Clusio depicta*).†

The tradition to which allusion has just been made is that the elder was the tree on which Judas hanged himself. The earliest reference to the legend, so far as I can discover, is that of the English Munchausen, Sir John Maundevile, (c. A.D. 1355), who, relying upon the credulity of those who might read his travels, thus wrote, 'And fast by, [in Jerusalem] is yet the Tree of Elder that Judas hanged himself upon.'‡ Unfortunately for this story, the elder, as Prof. G. S. Boulger notes, is not a native of Syria.§ Rather later than Maundevile, (c. A.D. 1377), we have an interesting passage in the 'Vision of William concerning Piers the Plowman':

"Iudas he iaped. with iiwen [Jewen] siluer,
And sithen or an eller. honged him after.'||

Passing over three centuries, we observe that Shakespeare makes Holofernes say, 'Begin, sir; you are my elder': to which Biron replies, 'Well followed: Judas was hanged on an elder.'¶ Again Ben Jonson has a similar remark: 'He shall be your Judas, and you shall be his elder-tree to hang on.'** From this time onwards we meet numerous references both to the elder superstition** and the virtues of the Jew's ear; a few of these will be mentioned in the next sections. Meanwhile, it is necessary to state that there are other claimants to notoriety as gallows-trees.

The fig tree has been put forward as the tree selected by

* 'Sketches of Country Life,' 1910, p. 39.

† 'Hymen. Europ.,' p. 695. The reference is presumably to Charles de L'Écluse, who wrote at the end of the 16th and the early part of the seventeenth centuries.

‡ 'The Marvellous Adventures of Sir John Maundevile, Kt.', ed. A. Layard, 1895, p. 112.

§ 'Familiar Trees,' N.D., I., p. 138.

|| Skeat's edition, 1888, Passus I., ll. 67-8.

¶ 'Love's Labour's Lost,' Act. V., Sc. 2, lines 609-10.

** 'Every Man out of his Humour,' Act. IV., Sc. 4. The elder is still called 'Judas tree' in Kent, (Eng. Dial. Dict., s.v.).

Judas, perhaps not altogether foolishly.* A Wendish legend claims the aspen, while at Palermo, the tamarind is favoured.† A more serious rival to the elder, however, is the 'Judas tree' (*Cercis Siliquastrum*), specifically so called. This leguminous tree, with its curious orbicular leaves and handsome rosy flowers, is seen in England only as an exotic in our parks and public gardens, but it has the advantage, in its appeal, of being found in a wild state in Palestine.‡ Both Gerard and Johnson, his editor, call this tree *Arbor Judæ*, and remark that it may be called, in English, 'Judas tree,' because it was thought to be the tree on which Judas hanged himself, and not the elder.§ One infers that Gerard did not invent the name *Arbor Judæ*, but no earlier record seems to be forthcoming. The German *Judasbaum*, and the French, *Arbre de Judée*,|| (which, however, means 'Tree of Judæa') are also interesting, but in the absence of dates concerning these names we cannot compare one legend with the other.

The pretensions of *Cercis* were rudely brushed aside by the late Dr. Cobham Brewer, who declared that the name 'Judas' in this association was really a corruption of the Greek word *kuamos*, the 'bean' tree, and that the confusion gave rise to the tradition.¶ *Cercis*, it is true, is a leguminous tree, with a fruit like that of a bean—one may sometimes see the brown pods in Kew Gardens—and a kind of bean (*kuamos*) is known to have been used in Athens for the electing of officers by lot.** On the other hand, Dr. William Smith definitely asserts that *kuamos* was the equivalent of the Latin *faba*, and certainly represented some kind of field bean.†† Even were the case otherwise, Dr. Brewer is a broken reed in matters of etymology, and the supposed transformation of the words, philologically considered, seems very improbable.‡‡ Such questions are fit only for academic pastime; it is enough for us to know that there was a tradition connected with the British elder, and that the tradition tinged the vulgar ideas about the parasitic fungus.

(To be continued).

* J. Timbs, 'Things not generally known,' new edition, p. 98.

† *Publins. Mod. Lang. Assoc. Amer.*, 1916, xxxi., p. 183, and note.

‡ J. C. Loudon, 'Arboretum et Fruticum Botanicum,' 1838, II., p. 658.

§ Gerard, II., p. 1240; Johnson, p. 1428.

|| Loudon, *loc. cit.*

¶ E. Cobham Brewer, 'Dict. of Phrase and Fable,' 24th edition, p. 466.

** H. Nettleship and J. E. Sandys, 'Dict. Class. Antiqs.,' 1899 p. 426a.

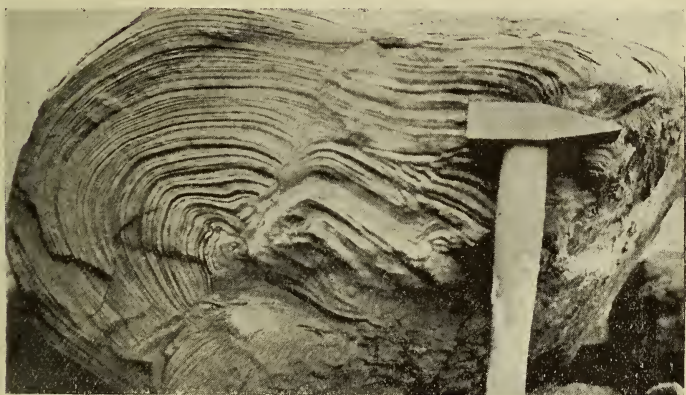
†† 'Dict. of Greek and Roman Antiqs.," 1866, p. 57.

‡‡ Moreover, under 'Arbor Judæ,' he declares that these words are a corruption of the Spanish *Arbol Judia*, the bean-tree. It is true that the Spanish word *judia* means both a French bean and a Jewess, but the term used for *Cercis* is *Arbol de amor*.

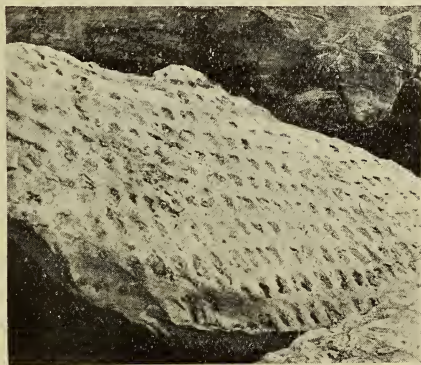
FALLEN BLOCKS NEAR BLEA WYKE POINT.

F. G. PERCIVAL, B.Sc., F.G.S.

ON April 12th, while walking from Ravenscar along the coast to Hayburn Wyke, we came across two interesting structures



in fallen blocks of Lower Estuarine Sandstone. The first was a sandstone which had apparently been subjected to folding



while still in a plastic condition. The accompanying photograph renders further description unnecessary.

The second block was not so easily explained. The surface of the block was roughly four feet long and two feet across, and was pitted with squarish hollows, each about an inch across. It is perhaps possible that these markings were due to two systems of ripple-marks crossing each other, but this is

unlikely for two reasons; first, many of the hollows were undercut, and secondly there appeared to be small 'tubercles' in many of the pits. It seems possible that the marks are the cast of a reptilian skin, the hollows corresponding to scutes, and the smaller 'tubercles' to pittings in the scutes.

About forty feet above the top of the Dogger, at Blea Wyke, are a couple of coal seams. These come down to the shore southwards, and the block was found a few yards from the cliff base, near the point where these coal-seams can be reached from the beach, about three-quarters of a mile south of Blea Wyke point.

—: o :—

Sirex gigas in Sheffield.—A few days ago, a fine specimen of *Sirex gigas* was seen flying in one of the principal streets in the centre of Sheffield. It finally alighted on a boy's shoulder. I can recollect that some years ago a specimen of this insect entered at the open windows of a school, situated only a very short distance from the same place.—J. M. BROWN, Sheffield, 19th July, 1919.

—: o :—

Calosoma inquisitor at Coniston.—During a visit to Coniston about the first week in June (1919) I took four females of *Calosoma inquisitor*, all running on the road near Tilberthwaite. They have been identified by Mr. J. W. Carter, of Bradford, from whom I gather that this beetle has not previously been recorded in the North of England.—GEO. GRACE, The Museum, Keighley.

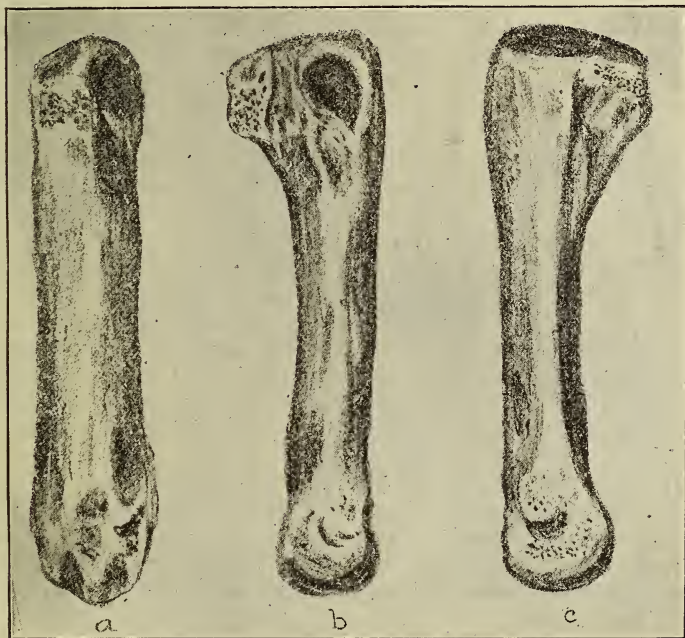
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Lesser Shrew (*Sorex minutus*) in Cumberland.—The Lesser Shrew is probably distributed sparingly throughout the Lake District, but there seem to be few actual records of its occurrence. A couple of handfuls of pellets of the Tawny Owl—at least such I judged them to be from their size and the place where they were found—that I gathered last June from beneath a fir tree in a plantation on the bank of Crummock Water yielded four skulls of the Lesser Shrew (*Sorex minutus*), eighteen of the Common Shrew (*S. araneus*), four of the Long-tailed Fieldmouse (*Apodemus sylvaticus*), and forty-six of the Field Vole (*Microtus agrestis*). The analysis revealed a limited range of diet: no Water Shrew, no Bank or Water Vole, no Rabbit, and no bird of any species, but its chief interest consisted perhaps in the relative plenty of the Lesser Shrew. Out of twenty-two Shrews' skulls four, or eighteen per cent. were referable to that species, a ratio that is much higher than is usual in owl-pellets in most parts of England.—CHAS. OLDHAM, Berkhamsted, Herts.

BONES OF BEAR FROM YORK.

T. SHEPPARD, M.SC., F.G.S.

ON page 36 of Volume V. of *The Natural History Journal* published at York by the Society of Friends' Schools, in 1881, appears the following note: 'A bone identified by James Backhouse, of York, confirmed by Mr. W. Davies of the British Museum, as the metatarsal of the Cave Bear or else *Ursus arctos*, was given me by a workman at the Bishopthorpe



Views of Metatarsal of Bear found at York.

gravel pits. He found it about 10 ft. below the surface, which is here the summit of a ridge, about 40 ft. above the river, dividing it from Knavesmire. So far as I am aware this is the first bone obtained from these gravel pits, and the first near York of a carnivorous animal, facts which give it considerable importance.'

The note is illustrated by three views of the bone, on 'plate 2.' On reading the note at the time, it occurred to me that in all probability this bone was a relic of the old whaling days, and had somehow been thrown out among some rubbish, eventually finding its way into a field, being found again during the excavations for gravel. In the old days it

was a common practice for the feet of polar bears to be very crudely stuffed with sawdust, a large disc of wood being placed where the foot was severed from the leg, and these 'curios' were preserved in various houses until such time as the primitive method of preservation resulted in the specimen harbouring moths, and becoming offensive, when they were thrown away, together with the contained small bones, claws, etc.

A little while ago Mr. S. H. Smith sent me for examination a quantity of glacial-borne boulders and bones, from the Dunnington gravel pits at York, which were owned by Messrs. J. H. Walker and Co. The boulders were typical of the glacial moraine in which the gravel pit occurs, and include rocks from Teesdale and the Lake District. The bones were obviously quite modern, and from the surface soil, and among them was the canine tooth of a polar bear, obviously comparatively modern and having no connexion with the gravel. These teeth are occasionally turned up in different parts of the district. We obtained one a little time ago among some seventeenth century rubbish during excavations in Hull.

As a result of this second find at York I communicated with Mr. J. E. Clark, who fortunately had preserved the bone of the bear, and this he has kindly presented to our Museum. A careful examination convinces me that the suggestion I have just made is correct, and that it had nothing to do with the gravel from which it was picked up, and this opinion is also that of the late E. T. Newton, F.R.S., who examined the bone for me.

It seems odd that remains of the bear should have occurred in two different gravel pits at York, five miles apart, but their age must be put down to that of about a century ago, when the well-known jaw-bones of whales and other Arctic relics were distributed over the country, especially in the vicinity of rivers and canals.

As the record in *The Natural History Journal* for 1881 may be included in palæontological literature, if not corrected, this note has been written.

—:o:—

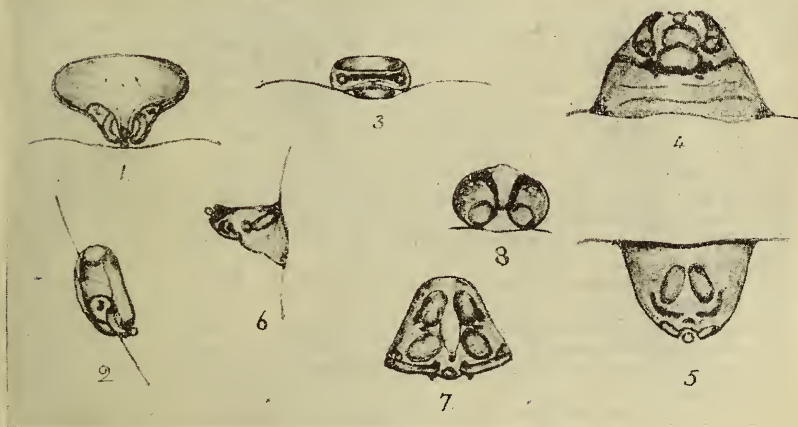
White Grouse Chick.—On one of the Bolton Abbey Moors the keeper told me there is a brood of young grouse, one bird of which is pure white. It is not known if the eyes are pink or normal.—JASPER ATKINSON.

Accident to a Skylark.—Casualties caused by entanglement to horsehair used in nest linings are not uncommon to bush-breeding birds, but a similar accident to a ground-breeder must be unusual. I had a Skylark under observation and visited the nest to see if the eggs had been hatched out. The bird was dead on the nest with its beak driven into the nest bottom and the head was held firmly down by a horsehair across the back of the neck.—JASPER ATKINSON.

NEW AND RARE BRITISH SPIDERS.

WM. FALCONER,
Slaithwaite, Huddersfield

DURING recent years many rare spiders have passed through my hands, and a few of the most noteworthy are here given more accessible and permanent record than that afforded by my note-books, together with the descriptions and figures of two species which I believe to be new to science. Collectors and localities :—R.A.T. the Rev. R. A. Taylor, of Burnley, Cornwall, 1913-17 ; W.P.W., Mr. W. P. Winter, of Shipley,



Troglohyphantes margerisoni sp. nov.

Epigyne of female. Fig. 1, from below ; fig. 2, from the side and a little below.

Enoplognatha mandibularis Luc.

Fig. 3. Epigyne of female.

Maro humicola sp. nov.

Epigyne of female. Fig. 4, view of lower surface. Fig. 5, view of upper surface.
 Fig. 6, in profile.

Maro minutus Camb.

Fig. 7. Epigyne of female.

Maro falconerij Jacks.

Fig. 8. Epigyne of female.

Gloucestershire, 1912-14 ; T.S., Mr. T. Stainforth, of Hull, Norfolk, July, 1916, Sussex, 1917 ; S.M. Mr. S. Margerison, Cumberland, 1913 ; uninitialled, the writer, Lancashire, 1903 and 1912, Isle of Man, 1908, Sussex, 1911.

Drassus minusculus L. Koch. ♀, Yarmouth, T.S. ; the few other records known to me are all for the south of England.

Prosthesima nigrita Fabr. ♀, Charlton Common, W.P.W., widespread but rare.

Clubiona cærulescens L. Koch. ♂, Arnside Knot, beneath débris of conifers, August, 1903; reported from a few places in the south; the only other northern record, Aberdeen ('Spiders of Dorset').

C. subtilis L. Koch. Both sexes, Yarmouth, T.S., a southern, mostly dune, spider, but plentiful on Spurn and in Wicken Fen.

Agroeca striata Kulcz. ♀, Puckham, W.P.W., noted for a few places on the south coast.

Scotina gracilipes Bl. Four ♂s, Point of Ayre, Isle of Man.

Cryphoea silvicola C.L.K. Andover and Leckhampton, ♀, W.P.W., a northern form, stated not to occur south of Norfolk, but as it has also been taken in Glamorgan (Dr. Jackson), it is thus found to extend farther along the western than the eastern side of Great Britain.

Theridion blackwallii Camb., ♂, Poulton, Lancashire, R.A.T., July, 1917; rare, on record for Surrey, Oxford, Wicken Fen and Northants.

Teutana grossa C. L. Koch, a melanic ♀, Lizard Peninsula, R.A.T.; very rare as a British species, reported from S.W. Ireland and two or three localities in S.W. England; a Mediterranean species.

Enoplognatha mandibularis Luc. ♀, Yarmouth, T.S. Previous records, Dorset and Channel Islands; abroad, extending from the Mediterranean countries eastward to China. As no figure or description of the epigyne appears in any English work, I give both. The organ (fig. 3) is minute, inconspicuous and the details not easily made out; it is transverse and close up to the epigastric border; anteriorly there is a small, narrow transverse process, directed slightly inwards; behind this a transverse ventlike orifice, having at each end a tiny round tubercle; the posterior margin curves inwards.

Laseola inornata Camb., ♂, Point of Ayre, Isle of Man; other records are all for the south.

Troglohyphantes margerisoni sp. nov. (figs. 1 and 2). One ♀, south of Buttermere, Sept., 1913, S.M., to whose memory I have the greatest pleasure in dedicating it. Description and figures, pp. 295 and 297.

Hilaïra excisa Camb. Lizard Peninsula, R.A.T., ♀. I know no other southern records, except for Glamorgan and Dorset.

Coryphæus denticheleis Sim. (*Tmeticus simplex*). ♀. Fairhaven, near Lytham, on foreshore; widely distributed but uncommon, often occurring in sewage works.

Sintula cornigera Bl. ♀, Grange-on-Sands. Widespread, but rare.

Maro humicola sp. nov. (figs. 4, 5, 6). ♀s, Ainley Place beck, Slaithwaite, odd examples every year since 1911 (April and May); 1♀ Hardcastle Crag, Hebden Bridge. In the former place confined to a small recess between the wood and the miniature ravine. Persistent search there and elsewhere has failed to turn up the male. Other rare species of the same genus (*minutus* Camb. and *falconerii* Jacks.) equally as small occur with it, but more frequently in both sexes. Description and figures pp. 295 and 300.

Entelecara thorellii Westr. ♀, Cleethorpes, E. A. Parsons, May, 1910, reported from Northumberland, Cumbs., Westmorland, Yorks., Southport and Edinburgh.

Styloctetor penicillatus Westr. Cheltenham, W.P.W.

Prosopotheca monoceros Wid. Crickley and Cheltenham, W.P.W.

Walckenaera nodosa Camb. ♂, ♀, Buttermere, S.M.; on record for Ulster, Northumberland, Cumbs., Yorks., Staffs., Dorset and North France.

Meta menardi Latr. ♀s, Chapel-en-le-Frith, C. Hastings; Buttermere, both sexes, S.M.; Cave at Killibegs, Donegal, October, 1911, R. Sanderson.

Philodromus praedatus Camb. ♂, Maresfield, Sussex, T.S. Its validity as a species distinct from *P. aureolus* Clerck has been questioned, but it differs somewhat in markings and is of stouter build; its palp and palpal organs are on a larger scale, and the spines beneath the palpal tibiae are more numerous and stronger. Simon, the most noted of arachnologists, believes it to be a good species. On record for Dorset and Delamere (Cheshire).

Oxyptila flexa Camb. ♀, Puckham, W.P.W. For many years it has been known that the names *O. flexa* and *O. praticola* attached to figs. 11c. and 11e. Pl. B. Proc. Dorset Field Club, Vol. XVI., 1895, are wrongly placed and should be transposed to be correct, but Mr. Cambridge for some reason or other never published the correction.

O. sanctuaria Camb. Clarach Valley, Aberystwith, 1♂, August, 1911, W.P.W.; Polegate, Sussex, 1♂.

Xysticus ulmi Hahn. Two ♀s, adult and imm. examples, Martin Beck Wood, V.C. 63, Dr. Corbett, new to Yorkshire. The examples stated to have been taken in Yorkshire (*Trans. Linn. Soc.*, Vol. XXVII., 1870, p. 405, sub *Thomisus westwoodii* Camb.) were really from Oxfordshire.

DESCRIPTION OF NEW SPECIES.

TROGLOHYPHANTES-MARGERISONI, sp. nov.

Female, length 2.6 m.m., figs. 1 and 2.

CEPHALOTHORAX, wholly suffused blackish, with a slender darker marginal line; broadly ovate, a little longer than wide, well attenuated forward. *Caput* distinctly defined by wide, deep, converging lateral depressions; a little elevated behind the eyes and sloping forward. *Profile line* thence curving to the thoracic junction, where there is a long linear dark reddish brown stria, behind which the posterior slope, triangularly excavated, descends gradually to the widely and shallowly emarginate posterior margin. *Thoracic sutures* widely sunk. *Hairs*, few, 3-4 stiff forward curved ones in a longitudinal line centrally placed behind the posterior eyes.

OCULAR AREA, prominent, the eyes occupying the whole of the upper front; provided with a few strong hairs.

EYES, eight in two rows. *Posterior* row somewhat recurved, eyes moderate in size, well separated, equidistant, the centrals apparently a little the smaller. *Anterior* row slightly procurved, the central pair somewhat projecting, much the smallest of the eight and closer to each other than to the laterals, which are apparently larger than the posterior ones. *Lateral eyes* on strong prominences. *Central eye space* a little longer than wide, and much narrower in front than behind. The limits of the eyes, however, are ill-defined and the pigmentation is weak, and details therefore difficult to make out correctly.

CLYPEUS, a little higher than the ocular area and concave below it, (the concavity all the more conspicuous by reason of the advanced position of the eyes) and then inclined to the frontal edge, near which is a transverse line of 6-7 short spines.

FALCES, MAXILLAE, LABIUM and PALPI, dull yellow brown, slightly suffused blackish.

FALCES, strong, without basal smooth area, much exceeding the clypeus in length, vertical, cylindrical towards base, then somewhat convex in front and behind, finally attenuated and a little divergent towards extremity and roundly truncated on apical inner margin. Towards the inner edge of each a longitudinal row of three long strong bristles directed across each other. A little below the middle of the inner face, a group of small, irregularly disposed spines.

Upper fang groove armed with 3 spaced conical teeth, the middle one the longest, the third shorter and blunter, all well removed from the insertion of the fang, which is long, curved and sharply pointed. *Lower fang groove* with 4 small contiguous granular teeth.

MAXILLAE, about $1\frac{1}{2}$ times as long as broad, internally curved towards the labium, obliquely truncate at apex, leaving an obtuse angle above, near which is a short, slender, black, sloping serrula; this angle and the inner margin as far as the labium clothed with a dense scopula of long hairs. On the outer surface a number of scattered stiff hairs, longer and more numerous on external margin, one especially so and strong.

LABIUM soldered to abdomen, much wider than high, and deeply impressed below. Apex roundly reflexed, with two pairs of hairs on inner margin and one pair on the outer.

ROSTRUM, projecting conspicuously above the labium; its posterior face with some very minute spines, but difficult to make out.

PALPI, fairly long. *Trochanter*, very short. *Femur*, long and curved, without spines, a little shorter than the tarse. *Patella*, very little longer than wide with a very long outer apical spine, about equal to four times the diameter of the joint. *Tibia*, nearly twice as long as the patella, very slightly enlarged upwards with three spines close to the apex, two of them on inner side; an acoustic seta in the middle. *Tarsus*, acuminate, ending in a long almost straight claw; about double the length of the tibia; well supplied with spines, towards the base two dorsal and one internal, near the middle two lateral spines, in terminal half five lateral spines (three internally and two externally).

STERNUM, suffused blackish, large, heartshaped, about as wide as long, convex especially behind, inflexed between the posterior legs in a broad parallel-sided prolongation equal to the diameter of the coxae; scattered over the surface a number of long straight black hairs, 4 (a central pair and lateral 1-1) near posterior margin especially long and bristly and upturned.

LEGS, order of length, 1, 4, 2, 3, very long and slender, yellowish brown, well provided with hairs and except the coxae, trochanter and tarsi with spines. *Coxae* viewed from below longer than wide. I. and II. equal and slightly longer than III. and IV. *Trochanters*, small, wider than long; I., II., III., with a short obtuse infero-lateral projection on outer side, bearing at summit a long hair and one or two of less length. *Femora*, all with long infero-lateral bristles, one pair near the distal end very long and projecting obliquely forward; femur IV. much longer than the others, unarmed and bowed to the curvature of the body; I., II., III., with a short dorsal spine, in I. and II. slightly in apical half; I., also with an internal lateral spine in the same half. *Patellae*, wider than long with a long slender spine at the apex, and an internal low protuberance. *Tibiae*, equal to the femora and about double the length of the tarsi; with two dorsal spines, one towards the apex, the other in the basal half; also a pair of lateral spines in the terminal third; I. and II. with two rows of long straight spines beneath (four or five in each row); III. and IV., one spine beneath in terminal third. *Metatarsi*, a little shorter than tibiae, with one spine near the middle and an acoustic seta a little behind it. *Metatarsi* IV., and *tarsi* IV., much slenderer than in the other legs. *Tarsi*, shorter than the metatarsi, without spines, cylindrical, with three slender slightly curved claws, the inferior one very small.

PEDICLE, short, in two pieces, the anterior convex, the posterior concave, chitinous.

ABDOMEN, oblong, oval, high and very convex in front, projecting over the cephalothorax and a little narrowed behind; without

a pattern, dull clay colour above and black beneath, well clothed all over mostly with shortish strong, curved hairs, springing from raised black bases; just above the pedicle, hidden from above and transversely arranged—an equal number on each side of the medium line—some eight very long slender stiff black bristles directed forward; on ventral surface in front of spinners a long narrow transverse straight vent, the entrance to the tracheal breathing apparatus; the *pulmonary stigmata* in the usual position, one on each side of the epigaster.

ANAL TUBERCLE small, sub-triangular, obtusely rounded at distal margin, provided with long bristles.

SPINNERS, six in number, the *median pair* small, concealed between the others, one jointed. *Upper and lower pairs* about equal in size, stout, truncate-cone-shaped, dull dusky brown in colour; two-jointed with the terminal part short.

EPIGYNE, figs. 1 and 2, an oval, reddish brown, transverse, convex chitinous plate, thickly rimmed laterally, close to epigastric border, hollowed out on the sides, and near its termination becoming shortly and somewhat narrowly tongue-shaped and deeply canaliculate with the end rounded and bent slightly inwards. Beneath this covering plate is another one membranous and pale, of which the lateral lobes and terminal crochet are exerted as an incomplete ring of processes around the end of the outer tongue.

T. margerisoni has the general appearance and build of one of the long-legged Linyphiæ. Its nearest British relative is *Taranucnus setosus* Camb., both species being distinguished from all others of the same group by one or more of the following features:—wide sternum, high clypeus, the armature of the legs, especially on the metatarsi and dorsum of the femora of one or both posterior pairs. In *T. setuosus* there is a dorsal femoral spine on both these pairs, but in *T. margerisoni*, this spine is wanting on legs IV.; further, their epigynes are quite unlike each other (see below). Of the foreign forms the new spider approaches most nearly *Troglohyphantes cantabricus* Sim. (1911), especially with respect to the epigyne, but that species is larger (3.4 m.m.) and its third pair of legs longer than the fourth; its epigyne is more raised above the surface of the abdomen, the median tongue-shaped process not so narrow, and the exposed lobes of the internal membranous plate take a much rounder, wider sweep.

T. margerisoni introduces a genus, *Troglohyphantes*, (Dr. Joseph, 1881), new to the British fauna. Half of the species in it were previously included in the Gen. *Taranucnus* Sim. and three others in Gen. *Typhloneta* Kulcz. The allocation of these spiders to one and the same genus has lately, after exhaustive study, been made by Dr. L. Fage*

*Archives de Zoologie Expérimentale et Générale, Tome 58, Fascicule 2, Jan., 1919.—'Études sur les Araignées cavernicoles, III. Le Genre *Troglohyphantes*.' Prof. L. Fage, to whose kindness I am indebted for copies of the three parts so far published.

of the Laboratoire Arago, Southern France. He also proposes briefly (leaving the details to a future memoir) a new natural classification of the Linyphieae into two divisions, based on the structure of the copulatory organs in both sexes.

Div. I., the palpal organs of the male provided with a long filiform, often rolled style; the copulatory pouch of the female, large, spacious, devoid of internal organs, *e.g.*, Linyphia, Labulla, Bathyphantes, Lessertia, Porrhomma.

Div. II., the style of the male palpal organs short, thick, lamellar and generally truncate at extremity; the copulatory pouch of the female more or less filled with an internal plate or tongue, *e.g.*, Leptyphantes, Microneta, Centromerus.

Taranucnus setosus Camb. belongs to the first division and *T. margerisoni* to the second, so that from this point of view they are far removed from each other, the former in fact being left the sole representative of its genus.

The Troglolyphantidæ occupy a narrow tract of territory between 42° and 46° N. Lat. from the Pyrenees to the Transylvanian mountains. They are mostly cave-dwellers, and the species local in distribution. A few of these are found out in the open also, and two species occur on high mountains in the vicinity of glaciers. Except their known restricted range, there is no reason, either geological or climatal in character or in that of their affinities, why a new species should not occur in Cumberland. Although no details of its habitat were obtainable, the latter would probably be similar to that of the forms which live in the open, viz., the base of herbage in swampy places nearly in the water; the cave-dwellers also choosing the wettest spots in the crannies of the stalactites.*

MARO HUMICOLA, sp. nov.

Females, length 1.3 to 1.6 m.m., figs. 4-5-6.

Forepart of the spider yellowish brown; the legs and palpi of a clearer tint and the cephalothorax of a darker shade. *Pubescence* sparse.

CEPHALOTHORAX, longer than wide, oval, narrowed a little forward from level of coxæ of legs I, rounded both before and behind, widely so in front so as to form a distinct constriction in the marginal outline. *Caput* distinctly defined by converging lateral impressions, convex behind the eyes and the *profile line* well curved to the thoracic junction, behind which the posterior slope is short and a little excavated; *thoracic sutures* indistinctly indicated by faint slightly darker lines. No marginal or other markings.

OCULAR AREA, occupying the whole width of the upper front.

EYES, eight in two rows, all on black spots, moderately large and very closely grouped, the anterior centrals only dark coloured, the rest pearly white.

* Histoire Naturelle des Araignées, 2nd Edit., Tome I. Eugène Simon, p. 690, sub. Taranucnus.

Posterior row, very slightly, if any, backwards, the centrals a little the smaller and a diameter apart and distinctly nearer to the laterals than to each other. *Anterior eyes* nearly contiguous to each other, and with the laterals of the hinder row forming a regular semicircle directed forward, the centrals on a common suffusion much the smallest and the laterals the largest of the eight.

Lateral eyes on each side in contact and situated on a feeble common oblique prominence. *Central eye space* longer than broad and much narrower in front than behind.

CLYPEUS, much less in height than the ocular area.

FALCES long, stout, vertical, somewhat oblong, slightly curved externally and divergent on inner margin near apex. *Upper fang groove* with four pointed teeth. *Lower fang groove*, four close minute granular teeth. *Fang*, long, slender, tapering.

MAXILLAE, moderately long and strong, oblong, well inclined inwards, the internal margin a little bent over the labium; truncate at summit near which a short black serrula; outer margin and face with a few shortish stiff hairs.

LABIUM, wide and short, depressed transversely below and bluntly rounded at extremity.

STERNUM, slightly diffused blackish or not, almost round, convex, squarely truncate in front and shortly drawn out between the posterior coxae in a wide blunt process, with slightly converging sides: thinly supplied with upturned hairs.

PALPI, short, without a terminal claw. *Femora*, long, slender, curved, slightly enlarging upwards. *Patellae* very short, with weak apical spine. *Tibiae* enlarged gradually upwards from base. *Tarsi*, more than one-and-a-half times as long as the tibiae, acuminate, provided with hairs and a few long slender black spines.

LEGS. Order of length, 4, 1, 2, 3; long and strong, moderately supplied with hairs, more plentifully and serially arranged on tarsi, and rising from slightly raised black bases. *Femora* I. and IV., long and curved; in I. the end of the joint is straightened, giving the pair together a lyriiform shape; II. and III., shorter and nearly straight. *Patellae* short, twice as long as wide, with a slight apical bristle and a small blunt protuberance on outer margin tipped with a single slender bristle. *Tibiae* III. and IV. with a long slender erect dorsal spine near the base, absent in I. and II. Tib. IV., with a long erect acoustic seta in the middle. *Metatarsi and tarsi* subequal, the latter if anything slightly the longer, and very slightly tapering. *Claws* 3, the two upper long, slender, curved, the lower one very small.

ABDOMEN, oblong oval, rounded before and behind, pale yellow brown, very slightly suffused blackish and projecting over cephalothorax. *Pubescence* little apparent.

SPINNERS, short, stout, truncate-cone shaped, surrounded by a lighter space; pale yellow brown in colour, clothed with short hairs.

SPIRACULAR AND EPIGYNAL AREAS. The same colour as the abdomen, the margin of the former being sometimes faintly indicated by a dark line.

EPIGYNE stands out at right angles to the abdomen, thus exposing both the upper and lower surfaces; somewhat complex in structure, large in proportion to the size of the animal, and its base close to the epigastric fold. Three figures, 4, 5 and 6, are given of this organ, and reference to them will obviate any necessity for further description. For purposes of comparison figures of the epigynes of the two allied species are also given, *minutus* fig. 7, and *falconerii* fig. 8.

Maro humicola, which, as its name implies, frequents

humus, agrees in general characteristics, disposition of eyes, build, etc., with *M. minutus* Camb., but the examples taken so far are a little larger and have a darker cephalothorax. It differs also in the structure and position of its epigyne, that organ in both *M. minutus* Camb. (fig. 6) and *M. falconerii* Jacks, which occur with it, being adpressed to the abdomen. No male has been met with, which could not be allocated either to one or other of the above two species. This sex not having materialised, the possibility must not be overlooked that the newly described species may only be another form of the female of *M. minutus*, but if so, the direction taken by the variation is, as far as I am aware, unique in the spider world. Until, however, this can be proved it will be as well to regard it as a distinct species. I may say that the Rev. O. Pickard Cambridge, to whom I sent a specimen, considered it to be such, and its publication has been until now withheld in the hope of obtaining a male.

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Blackbirds using the same nest twice.—With the exception of the Hirundines (Swallow and Martins) and perhaps the Dipper, it is very unusual for passerine birds to use the same nest for two broods. I can only recollect three such instances, viz., a Blackbird, a Robin and a Pied Wagtail; but in each case I had to presume that it was the same pair of birds that was using the nest twice. This year, however, in April, I found a Blackbird's nest in a bush about four yards from my dining room window, and with a little judicious trimming of the bush I was able to watch the proceedings throughout, at any time, from inside the room. Four eggs were laid, duly hatched and the four young birds left the nest about the middle of May. About a fortnight later we were much surprised to find the hen again sitting (I don't think the male Blackbird assists in incubating, I never remember having seen one, although he does his share in feeding the young ones). However, a second clutch of four eggs was hatched and four healthy youngsters left the nest on June 15th. So far as I could see the nest had not been repaired or altered in any way for the second brood. In this case there was not the slightest doubt about it being the same pair. The male was distinctly undersized, and had a slight (but very distinct) affection of the wings, which was most perceptible during the first few wing-beats when he took flight. I have no doubt that it was the same hen bird too, by several little incidents; one of which was she was so tame that she would allow several persons to stand quite close to the nest, when she was brooding, without showing any alarm. Baby Blackbirds always appear to me to leave their nests several days before they are competent to do so, which must result in great mortality among them.—HARRY B. BOOTH, Ben Rhydding.

YORKSHIRE NATURALISTS AT HAWES.

To those members of the Union who were able to take advantage of the excursion arranged for the Whitsuntide recess, June 7th to 9th, the gathering at Hawes proved a happy outing, not alone from the knowledge gained from the investigations along the traversed routes, but also from the loveliness of springtime which the neighbourhood of Hawes, at what is practically the head of Wensleydale, produced. The sunshine and warmth which prevailed also contributed to the enjoyment of the gathering, even though the drought militated against the numerous water-falls for which the district is noted, chief of which are those of Cotter and Hardraw, being seen in the fulness of their power.

It is thirty-five years since the Union made headquarters at Hawes, but the lower parts of Wensleydale, from Askrigg downwards, and their immediate vicinity have in that period of time received much attention. This part of our county is considered to rank next to Teesdale in the variety and scope which it affords to the lover of nature, due to a great extent to the mountainous character of the scenery, intersected by fertile valleys.

Headquarters were ideal, the creature comforts being well provided for at Simonstone Hall, a delightfully situated guest house, overlooking Hawes, from which it is distant one-and-a-quarter miles.

On Saturday the party proceeded to Appersett, traversed Widdale beck, and on nearing the head of the valley crossed the fellside, examining the two plantations, afterwards climbing over the shoulder of Widdale Fell, making the descent into Mossdale, the scenic charms of which were most restful.

Sunday morning was spent in climbing the very rough road to the famous 'Buttertub' potholes. Inspiring indeed were the views afforded of the 'roof of Yorkshire,' Ingleboro' being especially prominent. The potholes and adjacent ground gave ample opportunity for study to the botanist. An investigation of the magnificent amphitheatre, known as 'Hardraw Scar,' occupied the afternoon. There was no great volume of water coming over the lofty rock ledge, but the delightful ground flora, so varied in colour and extensive in species, and the tree embowered semi-circle of rocks, was a charming combination. The woods immediately above the fall have been to a great extent felled, and cleared, and part of the trees remaining are also marked down for commercial use.

Monday was a memorable day. Crossing the common the party descended to admire the scenic setting of Cotter Force, and proceeding up the valley eventually reached the small hamlet of Cotter, in the fold of the fells. After refreshment, Abbotside Common was traversed to the top of Lund's Fell, onwards to the Westmorland border. Here the cotton grass moor showed some excellent examples of retrogression, and re-invasion, while extensive remains of birch proved a notable feature. The views were pleasing, some of the giants of the Lake mountains being easily defined. Following the County boundary descent was made to Hell Ghyll, which was explored down to the force. On reaching Aysgill the party drove back to headquarters, a drive of seven-and-a-half miles. The day's outing was such as described in verse by F. Wightman :

'All t'woods, an' glens, an' watter falls,
An' t'wide far stretchin' heath ;
An' t'Bar guests haunts, an' goblins' halls
I' t'caverns underneäth ;
An' t'meadows sweet, dahn bi t'river's brim,
Are all Dame Nature's plan
For buildin' up wi' life an' vim
The gurt big heart of a Yorkshire-man.'

Sectional reports were given at the usual meeting held at the close of the excursion on Monday, Mr. W. N. Cheesman, J.P., occupying the

chair. Twelve new members were elected. Hearty thanks were accorded to the divisional secretary, Mr. J. Hartshorn, for the excellent arrangements made by him in connexion with the excursion, and to Mr. J. W. Astley for permission to traverse Abbotside Common.—W.E.L.W.

GEOLOGY.—Mr. John Holmes writes :—In the country round Hawes the succession of the Yoredale Rocks may be studied low down the valley, but to understand the causes which have determined the physical structure of North-west Yorkshire, a knowledge of the higher region is essential.

It was in this district—nearly three-quarters of a century ago—that Phillips carried out the classic investigations so eloquently described in his works on the Physical Geography and Geology of Yorkshire.

The whole area has been glaciated and much drift remains in the valleys. The glacier appears to have been of local origin, and probably descended from the eastern slopes of Baugh, Swarth and Wild Boar Fells. The distribution and composition of the drift was noted in Widdale Gill, Mossdale, Cotterdale, and on the right bank of Hell Ghyll Beck. No far-travelled erratics were found, the boulders being chiefly sandstone and limestone.

Masses of crinoids were noticed in the bed of Widdale Beck where the Great Scar Limestone forms tabular ledges over which the stream flows in cascades. In the Yoredales, the Hardraw Scar Limestone was examined at Hardraw and Cotter Forces. The Simonstone Limestone is exposed in Cotterdale where it is succeeded by a dark shale containing a remarkable variety of fossils. The higher beds in the Yoredales were often covered with drift along the routes followed, but the Main Limestone was seen on both sides of Widdale Fell and on Lund's Fell. A coarse grit occurs above the Main Limestone on both sides of Cotterdale.

The picturesque waterfalls at Cotter, Hardraw and Aysgill Forces are fine examples of ravine formation under different conditions. At Cotter the stream flows down ledges of limestone, at Hardraw, owing to the rapid weathering of the shales under the limestone, the water has a free leap of nearly 100 feet, at Aysgill on the opposite side of the main valley, the shales are not undercut but actually project beyond the overlying beds.

The action of water charged with carbonic acid on limestone was seen at the Buttertubs, a series of pot-holes in a shelf of the Main Limestone which is crossed by the road from Hawes to Muker. (See photograph in *The Naturalist*, 1910, Plate IX., Fig. 1).

The deep gorge of Hell Ghyll has been carved out of the Main Limestone by the chemical action of the water combined with the grinding of sand and pebbles caught by eddies in the clefts.

The rivers Eden and Ure both rise near the northern extremity of Lund's Fell and flow in nearly parallel courses down into the low ground between Lund's Fell and Wild Boar Fell. From the bottom of Hell Ghyll to the railway bridge, the party walked along this portion of the watershed, and it was noticed that a bed of glacial drift deflects the Eden on its northerly course to the Solway, while the Ure flows south, and then east, to the North sea.

On Tuesday morning a small party ascended Gayle Beck south of Hawes, up to Aysgill Force where sections similar to those seen in Widdale Beck were found. In the afternoon a visit was paid to Staggs Fell Quarries where flaggy sandstones have been worked in levels. A member of the party having provided candles, magnesium wire and a ball of twine, one of the levels was penetrated to the working face, a distance of 90 yards. In the evening a still smaller party walked to Fossdale Colliery where a seam of coal above the Main Limestone is worked by an adit. The coal, which is of poor quality and contains iron pyrites, is burnt by some of the cottagers of Hawes and Hardraw.

BIRD LIFE.—Mr. R. Jones writes :—The migrant birds seen or heard around Simonstone and on the excursions were as follows :—Swallow, House Martin, Sand Martin, Willow Wren, Spotted Flycatcher, Tree-

Pipit, Wheatear, Curlew, Dipper, Cuckoo, White-throat, Whinchat, Corncrake, Ring Ouzel and Redshank. Other birds of note that were seen were the Wren, Gold-crested Wren, Lapwing, Blue Tit, Cole Tit, Grey Wagtail, Carrion Crow, Kingfisher, Magpie and Wood Pigeon. There was quite a number of Gulls on the river. I identified two—the Herring Gull and the black-headed. I also found a young duck, only a few days old, on one of the pools in Mossdale, probably the chick of a wild duck. I saw no sign of the parent birds although I stayed a considerable time to watch. I was told the grouse observed was the 'black' variety (a tail feather produced partly confirmed this) which has been introduced into Swaledale and spread about the district.

The Yellow Wagtail was observed in large numbers. I never saw so many. The absence of the Yellow-hammer, Green-finch, Hedge-sparrow and Brown Linnet was very marked, probably due to the absence of hedgerow and scrub. On the other hand the stone walls should have attracted the Redstart and Stonechat, but neither was observed. A Wren and a Spotted Flycatcher were found nesting high up Cotterdale, where there was hardly a bush, and no tree of any kind.

CONCHOLOGY.—Mr. Greevz Fysher writes :—The continuance of the very dry weather was not favourable to the observation of terrestrial mollusca. The following shelled species were taken alive, and have been identified by Mr. John W. Taylor :—

Helicigona arbustorum

Hygromia striolata

— *hispida*

Hyalinia alliaria

— *nitidula*

— *cellaria*

Clausilia bidentata

Pupa umbilicata

Zua lubrica

Pyramidula rotundata

Ancylus fluviatilis

Several of the commoner slugs were also seen.

DIPTERA.—Mr. C. A. Cheetham writes :—The steep wooded bank in Widdale offered the best collecting ground and three additions were made here to the published county lists :—

Chilosia fraterna Mg. *C. maculata* Fln. *Tetanocera sylvatica* Mg.

C. maculata is in the unpublished lists of the Bradford Naturalists' Society. I saw it the following week-end at Ling Ghyll and Mr. Rosse Butterfield tells me he has seen it at Barden. *C. fraterna* I had taken the previous week at Austwick.

NEUROPTERA.—Mr. Cheetham states that he captured *Pyrrosoma nymphula* Sulz. in Widdale.

ISOPODA.—Mr. Falconer writes :—*Oniscus asellus* Linn. and *Trichoniscus pusillus* Brndt. were found everywhere in suitable situations from Hawes to Masham. *Porcellio scaber* Latr. near Bainbridge and *Philoscia muscorum* Scop. at Cotter Force.

ARACHNIDA.—Mr. Falconer writes :—During an extended stay in the district 61 species of spiders, only three of them at all rare or restricted in distribution, viz. :—*Theonoe minutissima* Camb., *Cnephalocotes elegans* Camb., *Anyphaena accentuata* Walck., were met with, and as there had been no previous investigation, all were for the first time definitely noted for Wensleydale, while 24 of them have not before been recorded for V.C. 65 :—*Theridion sisypium* Clerck., *T. pallens* Bl., *Phyllonethis lineata* Clerck., *Theonoe minutissima* Camb., *Cnephalocotes obscurus* Bl., *C. elegans* Camb., *Troxochrus hiemalis* Bl., *Cornicularia cuspidata* Bl., *Nerienne rubens* Bl., *Oreonetides montana* Bl., *Agyneta cauta* Camb., *A. decora* Camb., *Leptyphantus obscurus* Bl., *Clubiona reclusa* Camb., *C. pallidula* Clerck., *C. diversa* Camb., *C. comta* C. L. Koch, *Anyphaena accentuata* Walck., *Tegenaria derhamii* Scop., *Antistea elegans* C. L. Koch, and *Neon reticulatus* Bl., *Labulla thoracica* Wid., *Epeira diademata* Clerck., *Oxyptila trux* Bl. Particulars of these will appear in due course in the 'Spiders of Yorkshire.' The following are already in type and the new stations are added :—

Amaurobius fenestralis Stroem. and *A. similis* Bl.—Askrigg.
Robertus lividus Bl.—Semmerdale.
Savignia frontata Bl.—Cotter Force.
Diplocephalus cristatus Bl.—Whitfield Force.
Dismodicus bifrons Bl.—Whitfield Force.
Gongylidium rufipes Sund.—Aysgarth.
Agyneia conigera Camb.—Hardraw.

Four common harvestmen occurred not uncommonly, three in the immature condition, *Oligolophus morio* Fabr., *O. ephippiatus* C. L. Koch, and *Liobunum rotundum* Latr., and one adult, both sexes, *Nemastoma lugubre* Müll. The false-scorpion, *Obisium muscorum* Leach was taken at Mill Gill and Whitfield Forces, but I failed to turn up *Chthonius rayi* L. Koch at Aysgarth.

Only the most obvious mites could be taken without apparatus, e.g., *Gamasus crassipes* Linn., *Ritteria nemorum* Koch, *Anystis baccarum* Linn. and *Linopodes motatorius* Linn. which were frequent.

COLEOPTERA.—Mr. M. L. Thompson writes :—Mr. A. E. Winter, of Scarborough, who was present on the Saturday, met with 24 species of beetles in the following localities :—

Between Appersett Bridge, up Widdale Beck to Widdale Carr Plantation, viz. :—

<i>Notiophilus biguttatus</i> F.	<i>Liodes humeralis</i> Kug.
<i>Clivina fossor</i> L.	* <i>Hister unicolor</i> L.
<i>Stomis pumicatus</i> Pz.	<i>Byrrhus pilula</i> L.
<i>Pterostichus striola</i> Gyll.	<i>Corymbites cupreus</i> F.
	var. <i>aeruginosus</i> F.
<i>Trechus micros</i> Hbst.	<i>Corymbites quercus</i> Gyll.
<i>Deronectes depressus</i> F.	* — <i>aeneus</i> L.
<i>Hydroporus septentrionalis</i> Gyll.	<i>Helodes minuta</i> L.
<i>Aleochara fuscipes</i> F.	* — <i>marginata</i> F.
<i>Ocyopus cupreus</i> Ross.	<i>Telephorus pellucidus</i> F.
<i>Lathrobium fulvipenne</i> Gr.	<i>Rhagonycha limbata</i> Th.
<i>Stenus guttula</i> Müll.	* <i>Malthodes dispar</i> Germ.
<i>Geodromicus nigrata</i> Müll.	<i>Phyllobius urticae</i> DeG.

In the vicinity of Hawes, Simonstone, and the pastures at Appersett he found :—

<i>Nebria brevicollis</i> F.	<i>Creophilus maxillosus</i> L.
<i>Pterostichus madidus</i> F.	<i>Aphodius fossor</i> L.
<i>Calathus melanocephalus</i> L.	— <i>fimetarius</i> L.
<i>Anchomenus albipes</i> F.	<i>Geotrupes stercorarius</i> L.
<i>Dianous coerulescens</i> Gyll.	<i>Tropiphorus tomentosus</i> Marsh.

On the Monday I found the following species along the Cotterdale and West Gill route :—

<i>Nebria gyllenhali</i> Sch.	<i>Corymbites cupreus</i> F.
<i>Anchomenus albipes</i> F.	var. <i>aeruginosus</i> F.
<i>Quedius molochinus</i> Gr.	<i>Telephorus nigricans</i> Müll.
<i>Dianous coerulescens</i> Gyll.	<i>Malthodes minimus</i> L.
<i>Brachypteris urticae</i> F.	* <i>Gastroidea viridula</i> DeG.
<i>Cryptohypnus dermestoides</i> Hbst.	<i>Coeliodes 4-maculatus</i> L.
var. <i>4-guttatus</i> Lap.	— <i>geranii</i> Pk.

The species marked with an asterisk are new to V.C. 65.

FLOWERING PLANTS.—Mr. J. Hartshorn writes :—Much of the area investigated was being visited by the Union for the first time and there were interesting records calling for confirmation. *Trientalis europaea* rewarded the effort necessary to reach its habitat, though the number of blooms seen by the party was few. The record of *Meum athamanticum* in Mossdale was not confirmed. In the higher Gills, *Asplenium viride* was as frequent as its congener *A. trichomanes*. At lower elevations *Lastrea*

Filix-mas gave place to *L. montana* in the *Trientalis* Wood; *L. spinulosa* was common. *Cystopteris fragilis* grew well in characteristic situations and *Polystichum aculeatum*, varieties of the Lady-fern, the Beech-fern, Moonwort and Adder's-tongue were all noted. Of the two latter *Ophioglossum* was much more in evidence than *Botrychium*. On the moors of Widdale Fell, as of Little Fell, *Rubus Chamaemorus* was observed but not in sheets, neither did many flowers reward search. The round-leaved sundew gave interest to the sphagna in many places, and the Cranberry, *Oxycoccus quadripetalus* was quite plentiful near Hell Ghyll. Upper Wensleydale cannot vie with Teesdale above Middleton in its stretches of Globe-flower and it was the more pleasing to see it near the railway between Mossdale and Hawes in quantity. A feature of the pastures was the Crane's-bill, *Geranium sylvaticum*. *Arenaria verna* and *Hutchinsia petraea* are species with restricted distribution and it was a treat to add them to the list of 'finds,' as it was also to note the prevalence of that fine composite the Melancholy-thistle. *Lycopodium clavatum* was found on Stag's Fell.

Orchids were not so numerous either in individuals or species as expected, perhaps because of the nature of the season. *Listera cordata* was not diligently looked for and *Habenaria conopsea*, *H. alba* and *Orchis latifolia* are the only species of note. Other species of interest in their respective orders noted were:—*Saxifraga hypnoides*, *Draba incana*, *Pinguicula vulgaris*, *Hypericum pulchrum* and *Juniperus communis*.

MOSSSES.—Mr. C. A. Cheetham writes:—Mr. W.H. Burrell and I made a somewhat hurried investigation of the Widdale and Mossdale area. The following are perhaps the most noteworthy species:—

Polytrichum alpinum L.—Mossdale.

Seligeria pusilla B. and S.—Mossdale.

Blindia acuta B. and S.—C.fr.—Mossdale.

Weissia verticillata Brid. C. fr.—Mossdale and Widdale.

Zygodon viridissimus R.B.—Mossdale, on rocks.

Ulota crispa Brid.—Mossdale.

Breutelia arcuata Schp.—Mossdale.

Plagiobryum Zierii Lindb. C. fr.—Mossdale.

In Mossdale was *Catharinea crispa* James in fair quantity above the big waterfall, this is an additional species to the North Riding lists.

That part of Mossdale near the waterfall would repay more careful work.

HEPATICS.—Mr. F. E. Milsom, B.Sc., reports that at Buttertubs pass he found a nice quantity of *Scapania undulata*, both male and female, and fruit. In Cotterdale twelve common species were noted, chief of which was *Preissia quadrata* in fruit.

MYCOLOGY.—Mr. F. A. Mason writes:—The only agarics noted were *Panus torulosus* Fr. and *Mycena epipterygia* Scop., both identified by Mr. Cheesman, and the polypores were represented by a single species *P. squamosus* Fr. Several common discomycetes occurred freely in the damper places by the beck sides, and the variable ascophores of *Ombrophila clavus* Cke. grew plentifully on the dead sticks kept continuously wet by the spray under Hardraw Force. Special attention was devoted to an examination of the herbage along ghyll sides and road-side banks for 'rust-fungi' parasitic on leaves and stems, and together with two or three undetermined specimens the following species were observed:—

Cystopus candidus (Pers.) de Bary. On *Arabis hirsuta*.

Uromyces geranii Oth. et Wart. *Æcidia* on *G. sylvaticum*.

U. alchemillae Lév. Uredospores on *A. vulgaris*.

U. ficariae Lév. Teleutospores on *R. Ficaria*.

U. poae Rabh. *Æcidia* on *R. Ficaria*.

Puccinia obtogens Tul. Uredospores on *C. arvensis*.

Puccinia chondrillae Corda. *Æcidia*, uredospores and teleutospores on *Lactuca muralis*.

P. variabilis Grev. *Æcidia* on *T. officinale*.

P. taraxaci Plowr. Uredospores on *T. officinale*.

P. hieracii Mart. Uredospores on *H. Pilosella*.

P. leontodontis Jacky. Uredospores on *L. hispidus*.

P. betonicae D.C. Teleutospores on *B. officinalis*.

P. heraclei Grev. *Æcidia* on *H. Sphondylium*.

P. violae D.C. *Æcidia* on *V. odorata*.

P. obscura Schröt. Uredospores on *Luzula sylvatica*.

P. winteriana Magn. *Æcidia* on *Allium ursinum*.

P. poarum Niels. *Æcidia* on *Tussilago Farfara*.

Triphragmium ulmariae Wint. Uredospores on *S. Ulmaria*.

Coleosporium senecionis Fr. *Æcidia* (*Peridermium acicolum*) on *Pinus sylvestris*.

Ustilago violacea Fekl. On the anthers of *Lychnis diurna*.

Urocystis violae Fischer. On leaves and petioles of *V. odorata*.

MYCETOZOA.—The season was not at all favourable to the development of these organisms, but Mr. Cheesman succeeded in making gatherings of the undermentioned species :—

Physarum viride Pers.

P. nutans Pers.

Craterium minutum Fr.

Leocarpus fragilis Rost.

Didymium nigripes Fr.

D. squamulosum Fr.

Stemonitis fusca Roth.

Comatricha nigra Schröt.

Reticularia lycoperdon Bull.

Trichia affinis de Bary.

T. varia Pers.

Arcyria pomiformis Rost.

A. incarnata Pers.

Perichaena corticalis Rost.

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YORKSHIRE NATURALISTS AT PATELEY BRIDGE.

THE attendance at the excursion to Pateley Bridge on Saturday, July 5th, was very disappointing, especially when it is considered that the area selected for investigation possesses phases of study for practically all sections of natural history. The reason is unexplainable, possibly due in part to the unsettled state of the elements, most certainly it cannot be attributed to the tendency of the Union to visit Pateley Bridge too often, for thirty-four years have passed since it made its last visit.

A spare hour in Harrogate by some of the enthusiasts who had to travel early to reach their destination was agreeably spent, especially in the vicinity of the Pump House, where facial muscular contraction on the part of those 'toning' their system with the 'waters' could be studied to perfection.

On arrival at Pateley Bridge the party placed themselves under the guidance of Mr. C. A. Cheetham, and proceeded at once to Ravensgill, where the time available passed all too quickly. This glorious glen was indeed a beauty spot and a veritable moss and fern paradise. There were great areas dominated by the beech and oak ferns, the latter with fronds of large size. Nor were these the sole members of the Filices. Canopies of the Filmy fern (*Hymenophyllum unilaterale*) showing bead-like fructification, on the gritstone boulders; interstices of rocks, and moss covered boulders homed by the common polypody and northern hard ferns; handsome specimens of male and female showing variation; the fragrant *Lastrea Oreopteris*; the darker fronds of *L. dilatata* and *L. spinulosa*, were all in great abundance. The ground carpet of blossom did not evidence much variety, the steepness of the ground and shade accounting in a great measure for this, but where open spaces occurred the wood loosestrife, and *Orchis maculata*, with a charming white-flowered form, were conspicuous plants.

On emergence from the glen the moor was traversed to the old lead

workings where *Arenaria verna* whitened the refuse heaps with profuse bloom, and along with it was *Thlaspi alpestre*. On leaving here, the Greenhow ridge was traversed, an old quarry showing well the nature of the limestone. Amongst the varied grass sward the frog orchis and *Botrychium Lunaria* were noted. The walk down Greenhow Hill gave opportunity to study the picturesque beauty of the Pateley Valley. On nearing the base of the hill the fields were crossed into the woods, where *Trientalis europaea* in developing fruit was seen in profusion. From the woods access was gained to the grounds at Eagle Hall, where the party delighted themselves for some time. Here are magnificent specimens of conifers of the genera *Cedrus*, *Pinus* and *Cupressus*; various varieties of oak, and excellent examples of Japanese Maple. A choice collection of heaths, which included *Menziesia polifolia* proved very interesting. The chief occupant of the lakes was *Myriophyllum spicatum*. On arrival at the Hall Mr. Charles Ratcliffe, on behalf of Colonel Sir E. A. Brotherton, M.P. gave a hearty welcome to those present. After afternoon tea the usual meeting was held, Prof. J. H. Priestley occupying the chair.

After leaving Eagle Hall, the party, by special invitation, inspected the gardens and ornamental grounds at Bewerley Hall, under the guidance of Mr. T. E. Yorke and the Misses Yorke. Features of these grounds are the excellent examples of Yew and Portugal Laurel, the latter in full blossom, and particularly, a magnificent specimen of the Beech. The rock garden, designed by Mr. Yorke, was full of delight to the botanist, and time was well spent admiring its many inhabitants.

Within the grounds is an ancient chapel erected by Abbot Marmaduke Huby of Fountains, for the herdsmen, and in an alcove to the gardener's house the ceiling is decorated by a large female figure with chalice in hand.

At the close of the excursion hearty appreciation was expressed to Col. Sir E. A. Brotherton for his hospitality and permission to visit his estate, and also to Mr. T. E. Yorke for permission to visit his estate, and the additional pleasure given to inspect the gardens and grounds attached to his residence.—W.E.L.W.

BRYOLOGY.—Mr. W. H. Burrell reports :—About sixty mosses and liverworts were noted, including several rarer species known to occur in the district. *Bartramia pomiformis* var. *crispa* B. and S. was on rocks in Ravensgill Beck, in deep tufts with rusty coloured tomentum, and capsules more or less overtopped by the growing stems; *Trichostomum tenuirostre* Lindb. and *Schistostega osmundacea* Mohr. were in rock clefts at Guy's Cliff; *Tetraphis Browniana* in good condition clothed large surfaces of rock, and shewed positive geotropism, which is one of its characteristics when growing in suitable positions; other interesting features of Ravensgill were the extreme variation of *Eurhynchium myosuroides*, which on rocks exposed to water action in the stream bed assumed the rigid massive habit and dark colour of var. *rivulare* Holt., while in drier shady places several gatherings were made having the delicate attenuated growth of var. *cavernarum* Mol., and the rampant growth of *Dicranum fuscescens*, frequently showing the strongly curved leaves of var. *falcifolium* Braithw., which on rocks appeared to dominate the more common *D. scoparium*. Absence or scarcity of some of the very common species was perhaps the most persistent problem of the day's work. In a glen sufficiently humid to favour *Hymenophyllum*, it was unexpected that no trace of *Frullania* and *Metzgeria* should be found and that the two genera of arboreal mosses, *Orthotrichum* and *Ulota*, should not be represented amongst the large quantity of *Hypnum cupressiforme*, *Dicranum scoparium*, *Dicranoweisia cirrhata* and *Lophocolea* that festooned many of the trees.

MYCOLOGY.—Mr. M. Malone reports that he and Mr. R. Fowler Jones noted eighteen species. Most interesting of these was *Cordyceps capitata* (Holmsk.) growing from the body of a fly. It was first recorded by

Bolton of Halifax in 1788 from Ramsden Wood. Another species of which I can find no record was found by Prof. J. H. Priestley growing on *Thlaspi alpestre*. I took it to be a Puccinia at the time, but I had not sufficient material to make it out correctly.

BIRDS.—Mr. E. P. Butterfield reports that on the Darley side of Guy's Cliff a colony of Sand Martins was nesting—a rather high altitude for this species. An abundance of Swifts was noticed all down the Nidd Valley. Indeed this was the most noticeable ornithological feature, in contrast to the status of this species in the Wilsden part of the Aire drainage, where it is a very scarce breeding species.

DIPTERA.—Mr. C. A. Cheetham reports :—The most interesting fly seen on the excursion was *Dolichopeza sylvicola* Curt., the Phantom Daddy-long-legs, this being frequent in Ravensgill and its curious flight very noticeable; with the exception of the long white tarsi the insect is very dark brown, when flying the legs (which are very elongate and out of proportion) are widely spread, the anterior pair out in front, the middle out at the sides, and the hinder out behind, and all appear quite unattached to anything. *Limnia rufifrons*, F. also occurred here and an *Hilaria*, which Mr. P. H. Grimshaw kindly identified as *H. quadrifaria* Stobl., this latter having only been known from the South of England previously.

The weather was too dull for many species to be on the wing. Mr. R. Butterfield kindly handed me specimens taken whilst sweeping, very few of the larger syrphids were captured, only single specimens of *Eristalis arbustorum* L., *Catabomba pyrastris* L. and *Helophilus pendulus* L.

HYMENOPTERA.—Mr. R. Butterfield writes :—In Ravensgill I made special search for the red ant *Formica rufa*. Many old and deserted nests were found, though I did not see one tenanted, or an example of the ant. About twenty years ago it was common enough in Ravensgill, and of course it is possible it is still there. This ant has dwindled in numbers recently in the hilly parts of the West Riding, and it gave satisfaction to see the nests in the wood near Eagle Hall. I caught a specimen of the bee *Halictus freygessneri* Alf. near Pateley Bridge.

LEPIDOPTERA.—I captured a specimen of *Plusia interrogationis* on the moor near Ravensgill; *Venusia cambrica* was noted on the trees in Ravensgill; specimens of *Bombyx quercus* were seen on the moor, and I secured a specimen of *Anaitis plagiata* in the grounds of Eagle Hall. Mr. E. P. Butterfield saw *Acidalia fumata* near Guy's Cliff, and also near to the same locality *Phycis carbonariella*, *Tortrix viburnana*, *T. forsterana*, and *Gelechia ericetella*.

NEUROPTERA.—A specimen of *Cordulegaster annulatus* Latr., was caught on the moor edge at Ravensgill.

—: o :—

Tommy Smith again at the Zoo, by Edmund Selous. Methuen and Co., 180 pp., price 2/9. This is a companion volume to 'Tommy Smith at the Zoo,' recently noticed in these columns. Like its predecessor it will strongly appeal to young visitors to the Zoological Gardens, and our contributor has been able to put his store of animal lore into simple language. The animals dealt with in this volume are the Polar Bear, Great Bird of Paradise, Hippopotamus, Giraffe, Snowshoe Rabbit, Sea-bear, and Wolverine, each of which is illustrated.

The Human Skeleton: an Interpretation, by H. E. Walter. The MacMillan Co., 214 pp. The author tells us that every person has a skeleton of his own. To become better acquainted with it is a source of intellectual delight and satisfaction. The author, in an unusually entertaining manner, gives an excellent account of the wonderful mechanism of the human skeleton, comparing parts with the bony framework of other organisms. There is a wealth of illustration, many of the diagrams being on original lines, and occasionally even amusing.

CORRESPONDENCE.

UNDOCKED DOGS.

The Rev. Woodruffe-Peacock will find the passage respecting which he inquires (ante p. 246) in 'The Origin,' Chapter VI. under the caption 'Organs of little apparent importance,' but it runs 'the hare . . . can double *still more* quickly' (edition 1902). It may here be of interest if I mention an experiment tried with a tailless Manx Tom-cat. In a naturalists' periodical, the opinion was expressed that this deprivation would cause difficulty in alighting when dropped. To test this, I held Mick by the feet back downwards, at a height of three feet above a doormat. After falling a foot, he gave a quick and agile twist upwards to his back and came down quite squarely on all fours, thus proving himself a true son of the Isle whose boast is expressed in the well-known motto, 'Quocunque jeceris stabit.'—J. H. PAYNE.

SOUNDS THAT RESEMBLE THE SONGS AND CALLS OF BIRDS.

With eye and ear always on the alert for signs of birds one is often deceived by common-place sounds which resemble their notes. I here give some of my own self-deceptions:—

A man cleaning a street lamp made a noise with his wash-leather which exactly resembled the song of the linnet.

Walking over hard snow my walking-stick alternately thrust into the snow and withdrawn made a noise like the call of the common partridge.

My neighbour's mangling-machine at work made sounds like the singing of a robin.

A man sweeping an asphalted yard with a yard broom produced the call of the corn-crake whose harsh note I have also heard 'mimicked' by another man's squeaky boots. When one wishes to imitate this bird one's thumb-nail drawn across the teeth of a comb is the best means.

Preparing to use my thermos-flask the air escaping through the cork gave me, in effect, the grass-hopper warbler's 'song.'

I have actually mistaken the bleat of a lamb for the 'drumming' of a snipe.

Less excusable, however, was my mistaking the bleat of a goat for the chattering of a magpie. But I take some comfort from the fact that on this occasion, however, I was not the only one deceived.

A boy in the street, with a blade of grass held between his thumbs by blowing through the same made noises resembling the calls of more than one species of sea-gull.

I have heard the damping-rollers used in our office produce the shrill squeak of the golden-crested wren, 'chick-a-wee, chick-a-wee,' etc.

Stirring my cup of Oxo the spoon made a noise exactly like the 'come-back' of the guinea-fowl and this was recognised quite independently by my daughter.

Sharpening a lead pencil with a pocket knife in fancy I heard the alarm note of the garden-warbler.

It was in the office also that by scraping my foot on the cross bar of a stool I imitated the call of the coot.

One day when travelling by rail some portion of the moving woodwork of the carriage brought to mind the common sandpiper's 'willy-wicket.'

One night I dreamed that I was searching for the nest of the yellow wagtail. On awaking I found that in breathing I was making with my nose a noise resembling the call of this bird.

Sitting quietly at home at about 11 p.m., in early September, I actually mistook for the calls of migrating birds noises produced by a kettle just after boiling on a gas-stove. And again on November 20th I was deceived in the same way by a kettle on the hob. In these cases, of course, the time of day and year helped the deception by the association of ideas. When all is quiet here on an autumn night we can often hear the 'gabble-ratchet' within closed doors.

Once the voice of quite another sort of animal made me think that I had found a new bird. This was in spring whilst walking through Rain-cliff Wood, hoping to hear some newly-arrived summer visitor. And I did hear what seemed to me a new and most bird-like sound which, followed up was found to come from a stoat. The little 'fitch' was standing with head held erect on a little mound, and if not actually singing I don't know how otherwise to describe his vocal efforts. I certainly thought they were the song of a bird.—W. GYNGELL, Scarborough.

—:O:—

NEWS FROM THE MAGAZINES, etc.

Dr. O. T. Jones has been elected to the Professorship of Geology in the University of Manchester.

Mr. James Morrison has a paper on 'The Shap Granite Minor Intrusions' in the *Quarterly Journal of the Geological Society*, issued in July.

The Scottish Naturalist for July-August is devoted to the 'Report on Scottish Ornithology in 1918' (1/6), which is a very good report.

Besides several short notes, *British Birds* for April contains 'The Birds of Bardsey Island,' by N. F. Ticehurst; and 'Down Tracts in Nestling Birds,' by C. Ingram.

The Journal of the Board of Agriculture for July contains some remarkable photographs, showing the result of some drainage operations carried out by the Norfolk War Agricultural Executive Committee, with the aid of German prisoner labour.

The New Phytologist, issued July 15th, contains 'The Origin and Development of the Compositæ,' by James Small; 'The Cytology of two species of *Characiopsis*,' by Nellie Carter, and Field Observations on the Development of Potato Blight, by F. T. Brook; but 5/- for 70 pages seems rather 'stiff.'

With reference to Major Marriott's paper on 'The Ice-Age Question Solved,' (briefly referred to in *The Naturalist*, p. 216) Mr. H. Spencer Jones writes to *Science Progress* for July to say that astronomers generally do not accept Drayson's theory. This being so, the Ice-age question is by no means 'solved.' In the same journal Mr. H. Bury has an interesting paper on 'Some Palæolithic Problems' which should be carefully read by those who think that remains of early man can be classified like coins or foreign stamps.

At a recent meeting of the Linnean Society was exhibited a medallion portrait in bronze, hitherto unknown, of Carl von Linné, and wanting in Professor T. Tullberg's 'Linnéporträtt,' the comprehensive catalogue of Linnean portraits. The base of the head showed the name 'G. Wallis.' George Wallis (1811-91) was an art teacher in Manchester, London and Birmingham, and became Keeper of the Art Collections, South Kensington, in 1858, which he retained till the year before his death. Like nearly all plastic representations of Linné, it was made from portraits, as the period of the artist declares.

Under the heading of 'A Geological Find—Discovery by Scottish Professor'—the *Glasgow Herald* says:—'Sir Henry Jones, of Glasgow University, has just made a discovery which will probably have a very important bearing on the accepted theories of palæozoology. In a narrow rock fissure on the hills in the neighbourhood of Tighnabruaich, Argyll, 20 feet below the ground level, he observed a protrusion quite unlike any of the geological remains of the neighbourhood. The general appearance of the fossil was that of a petrified fish, but it had evidence of teeth and eye sockets quite unusual in the particular strata of the neighbourhood. Sir Henry called in the expert advice of the Scottish Archaeological Society to examine the find, and meanwhile for the sake of convenience it has been classified among the caproids. The importance of the discovery lies in the fact that hitherto this order has not been found earlier than in the post-pliocene beds, a much later strata than the Argyllshire hills.'



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T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,
THE MUSEUMS, HULL;

AND

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WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

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Contents :—

	PAGE
Notes and Comments :—'Oil Spurts in a Rectory'; Mixed Spirits; The Cause; A Peace Souvenir; Marine Biology; British Mycetozoa; Type Ammonites; Bradford Antiquaries; Derbyshire Naturalists, and their Publication; Sands; Iron Ores; Lincolnshire Ores; Septarian Structure; The Drake Collection; The Bower Collection ..	313-318
The Jew's Ear Fungus (<i>Hirneola auricula-judæ</i> Fr.).—Walter Johnson, F.G.S.	319-322
The Spiders of Yorkshire—Wm. Falconer ..	323-326
Westmorland Coleoptera—F. H. Day, F.E.S.	327-328
Two Phytophagous Chalcids—Rev. E. Adrian Woodruffe-Peacock, F.L.S., F.G.S. etc.	329-330
Some Derbyshire Plant-Galls—James Meikle Brown, B.Sc., F.L.S., F.G.S.	330-332
Common Wild Birds of the Scarborough District—W. Gynell ..	333-336
Field Notes :—Jackdaw's Unusual Nesting Site; Woodcock near Doncaster; Tree Creeper (<i>Certhia familiaris</i>); Palmated Newt (<i>Molge palmata</i>) in the Lake District; More <i>Plusia moneta</i> ..	318, 336, 337
British Association Notes ..	338
Correspondence :—Cause of Melanism in <i>Phigalia pilosaria</i> ; Large Pike and Herons; Starling; <i>Cypridedium Calceolus</i> ..	339-341
News from the Magazines ..	332, 337, 344
Proceedings of Provincial Scientific Societies ..	341, 344
Reviews and Book Notices ..	342-343
Northern News ..	328, 338, 341, 343, 344

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YORKSHIRE NATURALISTS' UNION.

BOTANICAL SECTION.

The Botanical Section will meet in the Botanical Department at Leeds University on OCTOBER 11TH, 1919, at 3-30 p.m.

BUSINESS.—To discuss and adopt the Annual Report and select officers and committees for election at the Annual Meeting.

CHRIS. A. CHEETHAM,
Stone Bridge Mills, Wortley, Leeds.

GEOLOGICAL SECTION.

President: DR. GILLIGAN, F.G.S.

A Meeting will be held in the Geological Dept., Leeds University, on SATURDAY, OCTOBER 18TH, 1919, at 3-30 p.m.

BUSINESS.—To consider and pass sectional reports for 1919, and to elect officers for 1920.

To discuss the future work of the various Committees and other matters.

Short papers will be given by several members of the Section.

Any Member or Associate of the Yorkshire Naturalists' Union is invited to attend and to bring notes, specimens, etc., and is requested to bring forward matters of interest connected with the work of the Section and to take part in any discussion. Will officials of Affiliated Societies kindly notify their Members?

Any further particulars from

J. HOLMES (*Hon. Sec.*), Crosshills, Keighley.

VERTEBRATE SECTION.

President: A. HAIGH LUMBY, Esq., SHIPLEY.

MEETINGS will be held in the Co-operative Society's Buildings, Albion Street (close to Midland and N.E. Railway Stations), Leeds, on SATURDAY, OCTOBER 25th, 1919. Afternoon at 3-30. (Members of the Wild Birds and Eggs Protection Act Committee meet at the same place at 2-30 p.m.).

BUSINESS:

Election of Officers; Report of Protection Committee; North, East and West Riding and York District Faunal Reports for the year. Short papers on Zoological topics.

Specimens, notes, photographs, etc., from any member or associate will be gladly welcomed.

Will Secretaries please announce to their Societies.

WALTER GREAVES, *Hon. Sec.*,
1 Chapel Avenue, Hebden Bridge.

ENTOMOLOGICAL SECTION.

President:—G. T. PORRITT, Esq., F.L.S., F.E.S.

Two meetings will be held in the Institute, Cookridge Street, Leeds, on SATURDAY, OCTOBER 25TH, 1919, viz., at 3-15 p.m., to consider and pass the Sectional Reports and to elect Officers for 1920; and at 6 p.m., at which entomological topics will be discussed.

Exhibits of all orders of insects are invited, and exhibitors should attach their names to their exhibits and label the specimens with names and data. Members and Associates of the Union are cordially invited. The Secretaries earnestly solicit notes and records made during the season on entomological subjects in the county, and specially ask that these should be in their hands by October 5th for inclusion in the Annual Report of the Union.

SECRETARIES.

Lepidoptera.—B. MORLEY (Skelmanthorpe) and H. H. CORBETT, M.R.C.S. (Doncaster).

Hymenoptera, Hemiptera and Diptera.—J. F. MUSHAM, F.E.S. (Selby).

Neuroptera, Orthoptera and Trichoptera.—G. T. PORRITT, F.L.S. (Huddersfield).

Coleoptera.—W. J. FORDHAM, M.R.C.S., F.E.S. (Bubwith).

B. MORLEY (*Sectional Secretary*), Skelmanthorpe.

NOTES AND COMMENTS.

'OIL SPURTS IN A RECTORY.'

Under the above heading appears a notice in the daily press describing 'remarkable happenings at the residence of the Rev. Hugh Guy, rector of Swanton Novers, near Melton Constable, Norfolk, since August 8, when *explosions and earth tremors* were observed. The rector and his family have noticed peculiar smells, due to the presence of oil on the walls and ceilings. On returning from a fortnight's holiday, the family found that their furniture had been ruined by spurts of oil, bursting out of the ceilings and floors. The spurts occurred every hour or so, especially if any movement took place in the house. It was impossible for the family to take up residence, for the oils were of a very high grade and distinctly inflammable. For a time the well of the house was not contaminated, but now it is impossible to draw a supply of liquid to the top without its being largely oil. The oil, it is stated, can be heard coursing up the walls, and along the plaster, and from the top storey petrol splashed into the room below. The oil flares and burns without giving off smoke.'

MIXED SPIRITS.

The report goes on, 'a singular thing is that from the second floor, paraffin of a good quality is given forth, while other samples are benzoline and a liquid resembling methylated spirits. The house is in one of the highest parts of Norfolk. On Monday the principal liquid forthcoming was water, which flooded the scullery. This was succeeded on Tuesday by petrol, on Wednesday by pure paraffin, on Thursday by a mixture of petrol and paraffin, while on Friday water again predominated.' [We wonder what happened on Saturday and Sunday—something drinkable for the Rev. Guy, we hope!] 'The petrol drips at the rate of about a quart in 5 minutes, but it evaporates in about ten minutes. The district is 30 or 40 miles east of the shale fields near King's Lynn, where shafts are being sunk.'

THE CAUSE.

From a subsequent report we learn:—'Mr. Williams dismissed the girl for three days and caused the house to be shut up. During this interval no liquid fell. In the meantime Mr. Williams cut off the water supply and removed all liquids except several pails containing water strongly salted. On the return of the girl she reported two more falls of liquid. This was found to be salted water. As the floor boards of the upper room had been removed there was an aperture through which what was happening down below could be seen. The girl took up a glass and threw some of

the salted water up to the ceiling. The girl, after first denying her hoax, made a clean breast of the matter, and burst into tears. Most of the experts who had investigated the 'mystery' were agreed that there was no hoax, and the Government experts even suggested that the house should be pulled down in order to begin boring operations!

A PEACE SOUVENIR.

Various places have celebrated Peace in various ways, but the City of Hull has, among other things, issued a souvenir which will be more permanent than many will be. Each of the 55,000 school children has been presented with an artistic and well-illustrated volume entitled, 'Kingston-upon-Hull: before, during and after the Great War.' It contains 120 pages and several plates and cost £2,500 to print. The volume contains a history of the city and district from the earliest times; an account of the progress of this country and of the formation of her colonies, as well as a record of the work done in Hull during the Great War. The book has been written by Mr. T. Sheppard, M.Sc., and published by Messrs. A. Brown & Sons.

MARINE BIOLOGY.

Volume XII., No. 1, of the new series of *The Journal of the Marine Biological Association* (157 pp., 3/6), contains 'A Contribution to the Quantitative Study of Plankton,' by Dr. E. J. Allen; Feeding Habits of some young fish; Food of Post-Larval Fish; the young of the Gobiidae (two notes) all by M. V. Lebour; the Development of the species of *Upogebia* from Plymouth Sound, by Gladys E. Webb; A suggested scheme for the investigation of Marine Bacteria, by H. S. Holden, and Seashore Diptera, by Col. J. W. Yerbury. We notice that the shortage of fuel resulted in the pumping of sea-water through the tanks being stopped for six hours each day, but the animals do not seem to have suffered. Steady and useful work has been accomplished at the Laboratory by Dr. Allen, Dr. Marie Lebour, Miss Webb, Mrs. Sexton and Dr. W. Wallace. There are several plates and illustrations in the text.

BRITISH MYCETOZOA.

The increasing interest taken in the study of our Mycetozoa is evinced by the British Museum's issue of a new (fourth) edition of the Guide to the British Mycetozoa.* Three new genera, *Colloderma*, *Leptoderma* and *Hymenobolus* are described and thirty-five new species are recorded since the issue of the third edition in 1909. Of the 260 known species 181 have

* 'Guide to the British Mycetozoa,' British Museum (Nat. Hist.), 8vo., 62 pp., 1s.

been found in Britain. Students will be pleased to see that habitats are now given for each species as well as the derivations of the generic and specific names, the descriptions considerably amplified and the nomenclature brought up to date in conformity with the International Rules. An outline of the life-history of these organisms is given in the Introduction, and reference is therein made to the discovery that the swarm cells (amoebulæ) fuse in pairs and that the resulting zygote forms the plasmodium. The authoress, Miss Gulielma Lister, F.L.S., reveals the secret for making really permanent mountings for microscopic examination and gives full instructions for the cultivation of plasmodia in which the mysterious rhythmic circulation can be seen, also of the amoebulæ which may frequently be observed feeding on bacteria. A useful glossary is now added and an illustration showing microscopic characters is given of a typical species of each genus, by which the determination of specimens is greatly simplified. We commend this booklet to naturalists in search of 'pastures new' as an easy introduction to a charming group of organisms.—W.N.C.

TYPE AMMONITES.

With part xix., which forms the first part of the third volume, Mr. S. S. Buckman alters the title of his publication to 'Type Ammonites,' omitting the word 'Yorkshire.' The present publication is smaller than usual and we find the price has been increased to 10/-, which we fear will seriously interfere with the circulation. The species figured are:—*A. bucklandi*, *ammonoides*, *cylindroides*, *perexpansum*, *intricatum*, *victoris*, *perfoliatum*, and *serpentinum*. In an interesting editorial Mr. Buckman tells us the theory that the forms now called nomomorphs are the females, and the phaulomorphs the males, but, on the authority of Buckman and Bather, 'there are not enough husbands to go round,' though why ammonites should be monogamous in the same way as the more civilised examples of *Homo sapiens* are supposed to be, is difficult to say. A photograph of Martin Simpson is given as a frontispiece.

BRADFORD ANTIQUARIES.

We are glad to note that the Bradford antiquaries have been able to re-issue their interesting publication, 'The Bradford Antiquary,' part 20 of the new series of which is before us, and has been edited by Dr. J. H. Rowe and Mr. P. Ross. There is a strong 'Roman' flavour in the volume, but whether the Roman Roads, etc., are really as perfect as represented is another matter. There is an excellent map of the Roman Road from Ilkley to Aldborough as far as the River Nidd, and, being joint Editor, Mr. Ross contributes the first four articles to the Journal, namely:—The Roman Road from

Ilkley to Aldborough as far as the River Nidd ; Flint Arrow Head found at Baildon ; Roman Road Excavation on Otley Chevin ; The Roman Mile calculated from the Milestones found south-east of Carlisle. Other contributions are :—Thornton Old Chapel, by W. E. Preston ; Some Bradford Bridges, by Miss J. S. Sunderland, and The Early Volunteer Movement in Bradford, by H. J. M. Maltby.

DERBYSHIRE NATURALISTS,

Vol. XLI. of *The Journal of the Derbyshire Archæological and Natural History Society* (192 pages) has been issued, and is quite up to the standard of this Society's publications. Among the contents we notice :—Notes on the History of Tideswell and its Manor, by J. M. J. Fletcher ; Notes on an old Churchwardens' Account Book (1597-1718) (St. Werburgh, in Derby), by Thomas L. Tudor ; The Earliest Registers of Weston-upon-Trent, Derbyshire, 1565 to 1605, by L. L. Simpson ; Derbyshire Grammar Schools—with a description of the seals, by Rev. Henry Lawrence, M.A. ; House-Burial, with Examples in Derbyshire, by S. O. Addy, and Pleasley Church, by W. Stevenson. Of more particular interest to our readers are :—Ornithological Record for Derbyshire, 1918, by N. H. Fitz Herbert ; Some Notes on collecting Lepidoptera at Repton, 1918, by H. C. Hayward.

AND THEIR PUBLICATION.

In regard to the volume generally, the papers are principally of archæological interest, one of which, by S. O. Addy, deals with 'House-burial.' We are afraid that Mr. Addy sees dwellings in trees, houses in the running brooks, 'Little Places' in books, and mud huts in everything ; and certainly the illustrations of two British Cinerary Urns on page 88, which he calls 'urns representing huts with posts and wattles,' are about as far-fetched as anything we have seen, and could be more readily described as Zulu tom-toms, or ladies' work-baskets, though with a little imagination they could be almost anything. Mr. Fitz Herbert's Bird Notes are illustrated by a peculiar example of a pied Moor-hen killed at Somersal.

SANDS.

Dr. P. G. H. Boswell's Inaugural Lecture delivered at the University at Liverpool, on November 16th, 1917, was entitled 'Sands, Considered Geologically and Industrially, under War Conditions.' The address has been published by the University Press of Liverpool (38 pages, 1/-). Dr. Boswell gives details of various methods of examining sands, and his address is illustrated by numerous diagrams and photomicrographs.

IRON ORES.

In the Journal of the Society of Chemical Industry for June, Dr. F. H. Hatch prints a lecture delivered at the Royal School of Mines, entitled 'Recent Iron-Ore Developments in the United Kingdom.' This contains many valuable references to the Iron-Ore of the Northern Counties, including the following relating to Yorkshire and Lincolnshire:— 'The Cleveland Ironstone is siliceous and requires lime to flux it. It is high in alumina and sulphur and this feature militates against its use for making basic pig-iron, since the alumina content makes it difficult to carry sufficient lime in the slag to ensure the production of a basic pig low in silicon and sulphur. To produce a suitable pig a considerable proportion of ores low in alumina, mainly of foreign origin, has to be added to the furnace charge. But, by using molten metal direct from the blast furnace and desiliconising it in a mixer, basic open-hearth steel can be made from Cleveland ores without admixture with foreign ores.'

LINCOLNSHIRE ORES.

The Frodingham ironstone almost invariably contains sufficient lime to be fluxed without the addition of limestone. It also carries about one per cent. of manganese and can therefore be smelted without the addition of manganese ore. These self-fluxing properties make it a most valuable ore, in spite of its low iron-content which averages only 22 per cent. The sulphur content is .16 per cent. and the phosphorus, .31 per cent. The Marlstone of South Lincolnshire, Leicester and Oxfordshire is on the whole a 'limy' ironstone and is often self-fluxing. In places, however, where the surface waters have leached out the lime, it is siliceous. Its phosphorous-content averages .25 per cent; sulphur .1 per cent.

SEPTARIAN STRUCTURE.

In the *Mineralogical Magazine*, No. 86, for May, Mr. W. A. Richardson has a paper on 'The Origin of Septarian Structure,' in which he reviews the various theories as to these peculiar features in nodules, and concludes 'That septarian structure consists of a polygonal system of cracks corresponding to a mud desiccation structure. That the cracking of the nodule is due to the desiccation of a colloidal centre by chemical means. That the nodules originated by the rhythmic precipitation of solutions diffusing through a colloid according to Liesegang's laws.'

THE DRAKE COLLECTION.

Two important geological collections of more than local interest have recently been acquired by the Hull Municipal

Museum, viz., the Drake and Bower collections. The first was formed by the late H. C. Drake, F.G.S., who spent many years in the Scarborough district, and also collected largely among the saurian and other vertebrate remains of the Oxford Clay in the Peterborough area. Mr. Drake was an exceptionally keen and patient collector and was very successful in extracting difficult specimens from their matrix. From the Oolites of the Scarborough and Malton districts he obtained a remarkably fine series of fish and reptilian teeth and bones, some being of altogether exceptional interest. He also carried out original work among the cephalopods. Many additional records to the fauna of these rocks have been made as a result of Mr. Drake's researches. He was also successful in securing many important vertebrate remains from the chalk of North Lincs. which have been described in *The Palaeontographical Society's Memoirs*, *The Geographical Magazine*, *The Naturalist* and other publications. Some years ago he considerably augmented the Geological collections in the Hull Museum, several cases being entirely occupied by his gifts. He also assisted in preparing the catalogues of this collection. The specimens recently obtained will be shown with his other fossils in due course.

THE BOWER COLLECTION.

The other collection was formed by the Rev. C. R. Bower. Many of the specimens are described and some figured in his paper on 'The Zones of the Lower Chalk of Lincolnshire,' in the Proceedings of the Geological Association for 1918. This collection consists of over a thousand excellently cleaned chalk fossils, carefully labelled and localised, including many of those which have been figured in his paper, as well as one of the two known examples of *Actinocamax boweri*, the other specimen being in the British Museum. The collections are largely from the Lower Chalk of Lincs., from the chalk of Yorkshire, and there is an interesting series from the Upper Cretaceous of Dover, Folkestone, Kent and Norfolk. Most of these specimens have been examined and verified by Dr. A. W. Rowe and Mr. C. Davies Sherborn.

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Jackdaw's Unusual Nesting Site.—A Jackdaw in this parish has built its nest, containing 3 eggs, in the top of a spruce fir, of no great height. The nest is a bulky structure, composed outwardly of a mass of sticks, and lined with straw and sheep's wool, there being also included among the materials a portion of a newspaper, and a piece of cloth to which a button is attached.—W. W. MASON, Melmerby, Cumberland, May 23rd, 1919.

THE JEW'S EAR FUNGUS

(Hirneola auricula-judæ, Fr.).

WALTER JOHNSON, F.G.S.

(Continued from page 290).

From personal experience, one gathers that the name Jew's ear has not survived to any great extent among country-folk. This is not surprising when we recollect dozens of similar cases, in which the loss is due both to a decline in actual knowledge and to a growing distrust in the medicinal efficacy of simples, when self-prescribed. There can be little doubt that monastic gardeners, peasant herbalists, and 'wise women' of the hamlet knew the Jew's ear well. Unfortunately, the popular name has come to be applied in a very liberal manner, for the valuable investigations of Messrs. Britten and Holland show that it is shared among *Hirneola* and three species of *Peziza* (*P. coccinea*, *P. cochleata*, and *P. venosa*).^{*} The last-named species is also known—presumably in the north country—as 'Jew's lugs.'[†] It is of some interest to recall that this application of 'Jew's ear' to *Peziza* runs parallel with one of the generic names adopted by Linnæus.

A hint has been already given that the association of the elder with Judas and the employment of the fungus in popular medicine, are involved in a mass of folk-lore concerning the tree itself. It would be manifestly out of place here to discuss fully the folk-lore of the elder, but a few references may be welcome to some readers.[‡] One legend must here suffice: in Haute Bretagne there was a belief that, until the suicide of Judas, elder-berries were delicious (*les baies de sureau étaient autrefois excellentes*), but after that event, they became too bitter for eating.[§]

VIII.—EDIBILITY AND MEDICINAL REPUTATION. To those mycologists who consider the question of edibility of prime importance, it may at once be said that the Jew's ear, if not savoury, is at least non-poisonous. A tiny nibble at the fungus will prove that it is almost tasteless, though it possesses slightly the odour which is characteristic of many of the mushroom group. Massee says that *Hirneola* is 'in all probability, edible,' although he is 'not aware of its having been tested';^{||} while Hay, who pronounces it 'insipid,' and 'a tasteless mucilaginous viand,' speaks from personal experience. 'I have tried the

^{*} J. Britten and R. Holland, 'Dict. of Eng. Plant-Names,' 1886, p. 279.

[†] *Pharmaceut. Journ.*, 3rd Ser., II., 1871, p. 878.

[‡] *Notes and Queries*, 10th Ser., vii., 1907, pp. 211-13; 11th Ser., xii., 1915, pp. 361, 410, etc. *Folk-lore*, 1905, xvi; 1912, xxiii.; 1913, xxiv; 1914, xxv.; E. Step, *op. cit.*, pp. 41-2. J. Grimm, 'Teut. Mythology,' ed., J. S. Stallybrass, 1883, II., pp. 651-2.

[§] P. Sébillot, 'Le Folk-Lorè de France,' 1906, t. III., p. 369.

^{||} 'Brit. Fungi,' p. 444.

Jew's ear.' he writes, 'both there [China] and here, but do not find it nice.'* This opinion coincides with that of Mr. E. W. Swanton, of the Haslemere Museum. In his useful little monograph he indeed classes *Hirneola* with the esculent fungi, † yet in a private note to the present writer he says that it is 'rather poor stuff.'

Some years ago Mr. W. N. Cheesman in *The Naturalist* related how he had been invited to dine with a farmer on 'Jew's Ears' Pie.' This pie was not composed of fungi alone, but was rendered more palatable and succulent by the addition of beefsteak. The farmer having stated that the 'Jew's ears' were gathered on a 'dry bank,' the guest made a careful examination of a portion, and found that the fungus was a species of *Peziza* (*P. repanda*)—a good illustration of the confusion lurking behind popular names. ‡

The use of the Jew's ear in salads is not a thing of yesterday. As previously noted, such dainties were referred to by Rabelais. The editors of Rabelais, after citing Vigneul-Marville (1713) to the effect that '*il y a danger de mort à manger de cette sorte de champignons,*' themselves declare that '*les Gastrolâtres n'y regardoient pas de si près.*' § In this country, too, the fungus was similarly employed, for in an old play by Heywood and Broome (1634) we read: 'All the Sallets are turn'd to Iewes-eares and Puckfists [=puffballs].' ||

The particular species of *Hirneola* which is chiefly valued for food is *H. polytricha*, Mont. This fungus, which is said to grow on decaying trees in Australia, New Zealand and Africa, has, according to Masee, been noticed on timber imported into Britain, though it is not a British species. ¶ China appears to be the only market for this delicacy, but since the average price is £45 a ton, Mr. J. H. Holland is justified in stating that the species is 'one of the few that can be classed as being of any commercial value.'** There is another esculent species, *H. rufa* Fr. which grows in like habitats in Japan, Ceylon, South America, and Australia. ††

The 'Chinese' Jew's ear, *H. polytricha*—for it grows naturally on the bark of the wild cherry in Central China §§—has often been confused with our own species when the question of edibility has been proposed. A long account of *H. polytricha*, or 'mu-esh,' as it is called by the Chinese, is given by Cooke in his 'British Edible Fungi.' In addition to the supply obtained from the wild cherry, quantities of 'mu-esh' are

* *Op. cit.*, p. 133. † 'An Annotated Catalogue of Edible Brit. Fungi,' 1900, p. 7. ‡ *Naturalist*, 1902, p. 273. § Rabelais, *ed. cit.*, t. iv., p. 356.

|| T. Heywood and R. Broome, 'The late Lancashire Witches,' 1634, (no pagination), E. 3, 4. Pearson's edn. of 'Works,' 1874, iv., p. 207.

¶ 'Brit. Fungus-Flora,' I., p. 58. ** *Naturalist*, 1903, pp. 53-4.

†† *Naturalist*, 1904, p. 117. §§ Cooke, 'Brit. Edible Fungi,' p. 177.

cultivated in a rather elaborate manner on the rotting bark of the China oak (*Quercus sinensis*), at Yun-Yang, whence it is exported to all parts of the country. There is also a species, reputed by some to be separate and non-indigenous to China, originally grown in New Zealand, Australia, New Guinea, and certain small islands of the Pacific. The Chinese value the Jew's ear both as a medicine and as the chief ingredient in making soup, the mucilaginous nature of the fungus appealing strongly to their palate. The popularity of this dainty seems, however, to be on the wane.*

Cooke was eager to ascertain, as have been numerous inquirers since his day, the exact food-value of *Hirneola*. Taking an air-dried specimen, he found that the Jew's ear differs from most of the other fungi in its low per-centage of albuminoids. Seventy-five per cent. of the whole consists of digestible carbo-hydrates, the principal of which is a gum-like body known as bassorin. Bassorin swells in water, and is soluble in dilute, warm solutions of caustic alkalies. These solutions gelatinize on cooling.†

The medicinal fame of the Jew's ear reaches back for several centuries. Primarily, it was deemed a sovereign remedy for throat affections. Phaer bids folk 'heate it agaynst the fire, and put it hote in any drynke, and the same drynke is good and holsume for the quinsye.' So precious is the specific that he recommends its being carried about on 'journeies.'‡ Gerard declares that 'the gelly of the Elder, otherwise called Iewes eares, hath a binding and drying qualitie: the infusion thereof in which it hath been steeped for a fewe howers, taketh away inflammations of the mouth, . . .'.§ Coles, after describing how the Jew's ear, placed in warm water, 'swelleth and openeth extreemly,' indicates its usefulness 'for curing Squinances, and Inflammations of the Throat.'||

Sometimes the remedy was applied in the form of 'oil of Jew's ears.' This was prepared by boiling the fungus in 'oyl-olive' until it was crisp, and then pressing out the oil.¶

A further use of the Jew's ear was to cure coughs. Anne Pratt quotes an old rhyme, the antiquity and provenance of which would surely be of interest if more information could be obtained. The lines run thus:—

'For a cough take Judas' Eare,
With the paring of a Peare;
And drinke this without feare
If you will have remedie.'**

The explanation underlying the belief in the potency of

* *Op. cit.*, pp. 177-180.

† *loc. cit.*

‡ Phaer, *loc. cit.*

§ *op. cit.*, II., p. 1235.

|| Coles, *loc. cit.*

¶ W. Salmon, 'Phar

macopeia Bateana,' 1713, p. 705.

** A. Pratt, 'Flowering Plants and Ferns of Great Britain,' N.D., III., p. 131.

Hirneola is perhaps to be partly found in the old 'doctrine of signatures.' There may have been a fancied resemblance between the wrinkles on the fungus and the human fauces.* Furthermore, as Mr. T. A. Cook states, in a volume full of new suggestions, the fungus was considered a good remedy for ear-ache by reason of its shape—an illustration of the same doctrine.†

A secondary use of the fungus, obviously based upon its physical properties, was to serve as a sponge for applying lotions to weak and diseased eyes.‡ From this employment as a medium for other remedies, the step towards faith in the virtues of the fungus itself as an eye-specific was very short, but, with Delisle Hay, we may well believe that the trust was misplaced. Yet so late as 1857, Berkeley could write that the Jew's ear was still occasionally sold at Covent Garden as a remedy for sore throats.§ About a quarter of a century afterwards, Cooke wrote that, of late years it had seldom been met with in herbalists' shops,|| and to-day it is doubtful whether any tradition concerning the curative properties of the Jew's ear anywhere survives.

IX.—UNSETTLED PROBLEMS. This paper is frankly tentative, and there are large gaps in the writer's knowledge. It may, therefore, be well to conclude by indicating points upon which further research and information would be welcome.

(1) The occurrence, and the frequency of occurrence, of *Hirneola* upon trees other than the elder.

(2) The significance of the variations in the fungus, when grown on the elder and the elm respectively.

(3) The temperature required for the germination of the conidia.

(4) The probability that a specimen which has borne conidia and has withstood the winter, may again be fertile; in other words, whether *Hirneola*, under favourable conditions, may be accounted a perennial. (There is no question, of course, of zoning, as in certain of the polypore group).

(5) The possible value of the fungus, commercially, as a mucilage.

Other problems will present themselves, but it may be that readers of *The Naturalist* have already answered some of those propounded above.

* Step, *op. cit.*, p. 40.

† T. A. Cook, 'The Curves of Life,' 1914, p. 131. (I am indebted to Mr. Alfred Ela, of Boston, Mass, for this clue.)

‡ Cooke, 'Brit. Fungi,' pp. 90-91.

§ 'Crypt. Bot.," p. 355.

|| 'Brit. Fungi,' pp. 90-91.

THE SPIDERS OF YORKSHIRE.

WM. FALCONER,
Slaithwaite, Huddersfield.

(Continued from page 270).

Cornicularia vigilax Bl.

A rare British spider, reported from Dorset, Glamorgan, North Wales, Staffordshire, Cheshire, Lancashire, Northumberland, Loch Shiel and Galway; abroad, France, Central Europe and North America. *Adult* autumn to spring. First occurrence—the author, Coatham Marshes, August, 1909.

V.C. 61.—Hornsea Mere, 1 ♂, and brickponds, Ryde Street, Hull, 1 ♂, Welwick, 1 ♀, T.S.

V.C. 62.—Basedale, Westerdale Moor, Eston, Normanby Intake, 'not rare locally,' J.W.H.; Coatham Marshes.

V.C. 63.—Wholestone Moor, both sexes, not uncommon, and in a sphagnum bog below Dean Head Church, both near Slaithwaite.

C. kochii Camb. (*C. valida* Jacks. ♀).

Rare, on record for Cheshire, Northumberland, and Lincolnshire, where the discovery of both sexes together established the fact that *C. valida* was the hitherto unrecognised female of this species. A male was submitted to the Rev. O. P. Cambridge, who confirmed the identification, but doubted its identity with the spider of the same name both in Kulczynski's *Araneae Hungariae*, and in Simon's *Histoire Naturelle des Araignées* and *Les Arachnides de France*. Vide *The Naturalist*, 1909, August, pp. 295-8, and September, 332-3. In Northumberland it occurs on the hills, and in the other localities on the coast. First occurrence—T. Stainforth, Saltend, May, 1909.

V.C. 61.—Saltend Common and Spurn, both sexes, E.A.P., T.S.; Humber Bank, at Welton, 2 ♂s, E.A.P.; Hornsea Mere, 3 ♀s, Humber Bank, between the New Joint Dock and Lord's Clough, 1 ♂, Broomfleet, ♂s, ♀s, Sunk Island, T.S.

V.C. 62.—Grangetown, 1 ♂, 1 ♀, Tees Mouth, within the breakwater, sub *C. karpinskii* Camb. (*The Naturalist*, January, 1915), Redcar, 1 ♂, J.W.H.

Gen. *Tigellinus* Sim., 1-2.

T. furcillatus Menge.

Very rare, having occurred in one or two localities in the south of England, and in Cheshire and Northumberland; abroad, France, Prussia, and Bavaria.

V.C. 63.—Wessenden Valley, an adult ♂, June, 1900, Honley Old Wood, 3 ♀s, 1907 and 1909.

Gen. *Typhochrestus* Sim., 1-1.

T. digitatus Camb. (*T. dorsuosus* Camb.).

A rare British spider, usually found near the sea, as in Dorset, Glamorgan, Anglesey, Cheshire, Southport, North Berwick and Edinburgh, and Meath; in the Colne Valley (Yorkshire), Staffordshire and Northumberland, on high inland moors; abroad, Holland and South of France. *Adult* autumn to spring. First occurrence—the author, Crosland Moor, November, 1903.

V.C. 61.—Bielsbeck, 1 ♂, T.S.; Spurn, 1 ♀.

V.C. 62.—Eston, 1 ♀, J.W.H.

V.C. 63.—Crosland Moor, Huddersfield, both sexes, plentiful in a sandy spot, beneath a furze bush, less so beneath neighbouring ones; Blackmoorfoot, Meltham and Slaithwaite Moor, a ♀ at each; Wholestone Moor, 2 ♀s.

Gen. *Neriene* Bl., 2-2.*N. rubens* Bl.

Widely distributed in the British Isles and on the Continent, found also in North America; usually common amongst grass and other herbage, fallen leaves, moss, etc. *Adult* autumn to spring. First record—R. H. Meade, Yorkshire, S.G.B.I. (Bradford, V.C.H.).

In V.C. 61, 62, 63, 64, found wherever investigation has been made and recorded stations numerous.

N. rubella Bl.

Not such a common spider as the last, but well distributed both in the British Isles and on the Continent; in some localities, abundant locally; generally amongst low vegetation in woods, or on the ground. *Adult* autumn to spring. First occurrence—the author, Leeds, December, 1902.

V.C. 61.—Boynnton Woods, 1 ♂, T.S.

V.C. 62.—Eston and Lonsdale, not common, J. W. H.; Kildale Woods, 1 ♂, 1 ♀, W.P.W. Robin Hood Bay, 1 ♀, W.E.L.W. Raincliff Woods, Hayburn Wyke, Riftwood (Saltburn), Kilton Woods.

V.C. 63.—About Bradford, Saltaire, Shipley, Cottingley, Harden, G.H.O., W.P.W.; Askern, Deffer Wood (Cawthorn), Denby Dale, Clowes Moor (Marsden), Chew Valley (Greenfield), Upper and Lower Stones Woods, Hey Wood, Honley Old Wood, Woodsome, Saville Wood, Lepton Great Wood, all in Huddersfield area, but not in any quantity; Morton Wood, Holmfirth, Sun Dean, South Crosland, Hebden Bridge, Crimsworth Dene.

V.C. 64.—Ilkley, W.R.B.; Elam Wood, Howden Ghyll and Rivock (Keighley), W.P.W.; Guisburn, F.R.; Sawley district, S.M., W.F.; Roundhay Park (Leeds), Adel, Wharfedale from Bolton Woods to Boston Spa, Hackfall.

V.C. 65.—Y.N.U., Upper Teesdale, Mickleton.

Gen. *Enidia* F. P. Smith, 2-2.*E. cornuta* Bl.

Commoner in the south of England and Ireland than in the north of these countries; not yet noted for Scotland; European distribution wide (north and centre). Most of the following were taken amongst ground vegetation, but it may be beaten from the foliage of trees. *Adult* in May and June. First occurrence—the author, E. Keswick, June, 1905.

V.C. 61.—Deepdale Woods (Beverley), a few of each sex, T.S.; Skipwith Common, many ♂s and ♀s, W.P.W., W.F.; Rillington and Scampston, several females.

V.C. 62.—Eston, 'not common,' J.W.H.

V.C. 64.—Malham, below the cove, 1 ♂, W.P.W.; Bolton Woods, a few females; Harewood Park, 1 ♂; East Keswick, 2 ♂s; Dalton Lane, 1 ♂.

E. bituberculata Wid.

Widely distributed in the British Isles; abroad, Sweden, Denmark, France, Central Europe and South Russia; amongst grass, rushes and moss, often in damp places. *Adult* April to June; ♀s also a little earlier and later. First occurrence—the author, East Keswick, June, 1905. In V.C. 61, 62, 63, a plentiful spider in suitable situations, and widely diffused. It does not, however, seem at all a common spider for a wide area around Huddersfield; in boggy ground, near Goathill Farm, on Slaithwaite Moor, few females; Clough House Wood, 1 ♀; Harden Clough (Meltham); Morton Wood (Holmfirth), 1 ♂, Hardcastle Crag, by river, amongst wood-rush, opposite the Pavilion, ♀s. The same remark applies to the hilly western areas.

- V.C. 64.—Howden Ghyll, Morton Moor, Shipley Glen, W.P.W.; Bishop Wood, T.S.; Y. N. U., Harewood Park, and Woodhall; Sawley district, S.M., W.F.; Malham Tarn; Bolton Woods, East Keswick, Stubbing Moor.

Gen. *Dismodicus* Sim., 1-2.

D. bifrons Bl.

Widespread and usually common in the British Isles; abroad, Sweden, France, Germany and Hungary; at the roots of grass and herbage, and amongst low vegetation. Often in damp ground. *Adult* May to July. First occurrence—the author, Dean Head, May, 1908. Widespread and plentiful in the county, the recorded stations being very numerous.

Gen. *Gongylidium* Menge, 1-1.

G. rufipes Sund.

Widely distributed in the British Isles and on the Continent; amongst low vegetation and fallen leaves, sometimes beneath stones, especially in woods; common in many areas, but apparently not so in Yorkshire. *Adult* May to August. First occurrence—the author, Dalton Lane, June, 1903.

- V.C. 61.—Widely diffused, but not yet noted for the dune area, or the tidal affluents of the Humber.

- V.C. 62.—Eston and Lonsdale, 'not very common on crowberry,' J.W.H.; Ayton Village, W.P.W.; Kirby Moorside, H.C.D.; Scarborough, Cayton Bay, Lewisham, Kilton Woods, Riftswood (Saltburn).

- V.C. 63.—Very scarce, apparently. Hurst Wood (Shipley), W.P.W.; Campsall.

- V.C. 64.—Elam Wood (Keighley), Burley-in-Wharfedale, W.P.W.; Y. N. U., Bishop Wood; Adel Moor and King Wood; Wharfedale, from Bolton Woods to Linton Common, and Boston Spa, Stubbing Moor, etc.; Washburn Valley; Spa Gill (Sawley); Hackfall.

- V.C. 65.—Croft, E.A.P.

Gen. *Edothorax* Bertk., 6-7.

(Gen. *Gongylidium*, Menge. *ad part.*).

Æ. fuscus Bl.

A common, and often abundant spider, widely distributed at home and abroad, in a variety of situations. *Adult* most months of the year. First occurrence—the author, Slaithwaite, September, 1897.

In V.C. 61, 62, 63, 64, found wherever investigation has been made, and recorded stations very numerous.

Æ. agrestis Bl.

Closely allied to the last and widely distributed in Great Britain (as far north as the Grampians) and on the Continent; only noted for a few localities in Ireland; amongst grass, fern débris, etc., and sometimes under stones. *Adults* most months of the year. First occurrence—the author, Slaithwaite, April, 1900.

- V.C. 62.—Eston Moor and Marton, 'sparingly,' J.W.H.; Goathland, Kilton Woods, Riftswood (Saltburn).

- V.C. 63.—Bradford, Bingley, Saltaire, Shipley, Harden and Cottingley, but not in any quantity, R.B., W.P.W.; Crimsworth Dene, W.P.W., W.F.; Deffer Wood (Cawthorn); Bottoms Wood (Slaithwaite) and Drop Clough (Marsden), both sexes abundant; less plentifully Clowes Moor (Marsden), Chew Valley (Greenfield), Wilshaw and Meltham, Marsden Clough (Holmfirth), Lower Stones Wood (Stockmoor), Saville Wood (Huddersfield), and Ainley Place.

V.C. 64.—Wharfedale, from Bolton Woods to Harewood, W.P.W., W.F.; Shipley Glen, and Saltaire Park, W.P.W.; Knaresborough, Adel Moor, Brim Bray (Sawley).

V.C. 65.—Y.N.U., Upper Teesdale.

C. retusus Westr.

Widely distributed in the British Isles as far north as Inverness, and abroad extending from Novaya Zemla and Siberia to North Africa. Season as in the last. First occurrence—the author, Drop Clough, May, 1899.

V.C. 61, 63, 64, taken wherever investigation has been made and recorded stations numerous in all parts.

V.C. 62.—Kildale and Grangetown, G.B.W.; Lonsdale, J.W.H.; Thornton Dale and Oliver's Mount, R.A.T.; Raincliff Woods, Goathland, Boosbeck, Marske.

V.C. 65.—Y.N.U., Upper Teesdale.

C. apicalis Bl.

Apparently nowhere common, but widely distributed in Great Britain and occurring in several countries in the centre and north of Europe; 1 ♂ recently taken in Ireland; at grass roots and beneath stones. First occurrence—T. Stainforth, North Cave, August, 1908.

V.C. 61.—North Cave, shore at North Ferriby, Marfleet Creek, Saltend, Ryehill, Patrington Haven, Spurn, Bielsbeck, Bridlington, Burton Constable, Houghton Woods, T.S.

V.C. 62.—Coatham Marshes, 1 ♂.

C. gibbosus Bl.

This and the next are obtained in marshy ground usually in each other's company, together with females. No reliable means of separating the latter sex in the two species exist, and even the discovery of a pair in copula at Delamere Forest, in June, 1906, did not lead to the discovery of any differential character. Probably, therefore, there is but one species with dimorphous males; both widely distributed in the British Isles; abroad, France and Bavaria. *Adult* May and June, ♀s later also. First occurrence—the author, Drop Clough, June, 1899.

V.C. 61.—Pulfin Bog (Beverley), T.S., E.A.P.; Weedley Springs, Hornsea Mere, Kelleythorpe, King's Mill Marsh (Driffeld), T.S.; Skipwith Common, W.P.W., W.F.

V.C. 62.—Cleveland, 'every locality visited, common,' J.W.H.; Ringingkeld Bog., R.A.T.

V.C. 63.—Stony Ridge, Moorhead and Hurst Wood (Shipley), W.P.W. Plentiful in bogs in Huddersfield district, Slaithwaite Moor, Royal Clough (Scammonden), below Dean Head Church, Drop Clough, Wessenden Valley, Standedge and Pule, Clowes Moor, Chew Valley, Meltham, Honley, Marsden Clough (Holmfirth).

V.C. 64.—Morton Moor, Keighley, W.P.W.; Adel Bog; Sawley District; Chandler's Whin and Askham Bog.

V.C. 65.—Y.N.U., Upper Teesdale.

C. tuberosus Bl.

Recorded also for Egypt and Algeria—see the last. First occurrence—the author, Drop Clough, June 1900.

V.C. 61.—Hornsea Mere, Saltend Common, Weedley Springs, King's Mill Marsh (Driffeld), T.S.; Skipwith Common.

V.C. 62.—Cleveland, 'every locality visited, common,' J.W.H.

V.C. 63.—Naylor Rough and Hurst Wood, Shipley, W.P.W.; for Huddersfield area see previous species.

V.C. 64.—Valley of Desolation (Bolton Woods), W.P.W.; Gargrave, R.B.; Chandler's Whin and Askham Bog; Adel Bog; Malham Tarn; Brim Bray (Sawley).

(To be continued).

WESTMORLAND COLEOPTERA.

F. H. DAY, F.E.S.

(Continued from page 242).

- Poophagus sisymbrii* F. Melkinthorpe (Britten), Kirkby Stephen (Day).
Orobitis cyaneus L. Tebay (Bowman).
Limnobaris T-album L. Cliburn Moss (Britten), Witherslack (Day).
L. pilistriata Steph. Glenridding (Britten).
Calandra oryzae L. Tebay (Bowman).
Balanobius (Balaninus) salicivorus Pk. Melkinthorpe (Britten).
B. pyrrhoceras Marsh. Melkinthorpe (Britten), Witherslack (Day).
Anthonomus comari Crotch. Sunbiggin Tarn (Britten), Witherslack (Day).
A. inversus Bed. (*ulmi* Brit. Cat.). Melkinthorpe (Britten).
A. pedicularius L. Melkinthorpe (Britten).
Elleschus bipunctatus L. Tebay (Bowman).
Anoplus plantaris Naez. Melkinthorpe, Cliburn, Whinfell (Britten),
 Witherslack (Day).
Orchestes quercus L. Melkinthorpe (Britten).
O. pilosus F. (*ilicis* F.). Melkinthorpe (Britten).
O. fagi L. Tebay (Bowman), Melkinthorpe, Cliburn (Britten), Lowther
 Park (Day).
O. rusci Hbst. Melkinthorpe (Britten).
O. salicis L. Melkinthorpe (Britten).
O. stigma Ger. Witherslack (Day).
O. foliorum Müll. (*saliceti* F.). Melkinthorpe (Britten).
Rhamphus pulicarius Hbst. (*flavicornis* Clairv.). Melkinthorpe, Cliburn
 (Britten), Witherslack (Day).
Mecinus pyrauster Hbst. Melkinthorpe, Cliburn, Glenridding (Britten),
 Witherslack (Day).
Gymnetron labile Hbst. Melkinthorpe (Britten).
G. beccabungae L. Melkinthorpe (Britten).
Cionus scrophulariae L. Melkinthorpe, Cliburn, Glenridding (Britten),
 Witherslack, Gaisgill (Day).
C. pulchellus Hbst. Glenridding (Britten).
Apion carduorum Kirb. Melkinthorpe (Britten).
A. ulicis Forst. Kirkby Stephen (Thompson), Cliburn, Clifton (Britten).
A. pallipes Kirb. Melkinthorpe (Britten).
A. seniculum Kirb. Melkinthorpe (Britten), Witherslack (Day).
A. frumentarium Pk. Rydal (Black), Whinfell, Cliburn Moss (Britten),
 Witherslack (Day).
A. nigritarse Kirb. Melkinthorpe (Britten).
A. flavipes Pk. Melkinthorpe, Cliburn (Britten), Witherslack, Kirkby
 Stephen (Day).
A. assimile Kirb. Tebay (Bowman), Melkinthorpe (Britten).
A. apricans Hbst. Melkinthorpe (Britten).
A. curtirostre Germ. (*humile* Germ.). Tebay (Bowman), Melkinthorpe,
 Cliburn, Strickland, Whinfell (Britten), Witherslack, Kirkby
 Stephen, Lowther Park (Day).
A. marchicum Hbst. Rydal (Black), Melkinthorpe, Cliburn (Britten),
 Witherslack (Day).
A. violaceum Kirb. Tebay (Bowman), Melkinthorpe (Britten), Withers-
 lack, Kirkby Stephen (Day).
A. platalea Germ. (*unicolor* Brit. Cat.). Melkinthorpe (Britten).
A. viciae Pk. Melkinthorpe (Britten), Witherslack (Day).
A. pisi F. Tebay (Bowman), Melkinthorpe (Britten).
A. punctigerum Pk. Melkinthorpe (Britten).
A. aethiops Hbst. Melkinthorpe (Britten).
A. striatum Kirb. Cliburn (Britten).

- Apion ervi* Kirb. Melkinthorpe (Britten), Witherslack (Day).
A. virens Hbst. Melkinthorpe (Britten), Witherslack (Day).
A. tenue Kirb. Melkinthorpe (Britten). Witherslack (Day).
A. loti Kirb. Melkinthorpe (Britten).
Rhynchites betulæ L. Melkinthorpe, Cliburn (Britten), Witherslack (Day).
R. mannerheimi Humm. (*megacephalus* Germ.). Melkinthorpe, Cliburn (Britten).
R. germanicus Hbst. (*minutus* Brit. Cat.). Melkinthorpe, Cliburn (Britten), Witherslack (Day).
Byctiscus betulæ L. (*betuleti* F.). Melkinthorpe, Cliburn (Britten).
Eccoptogaster (Scolytus) scolytus F. (*destructor* Ol.). Melkinthorpe (Britten).
 Lowther Park (Day).
Phloeophthorus rhododactylus Marsh. Cliburn (Britten).
Hylesinus crenatus F. Melkinthorpe (Britten).
H. fraxini Pz. Melkinthorpe (Britten).
Myelophilus piniperda L. Tebay (Bowman), Cliburn, Whinfell (Britten).
Hylastes ater Pk. Cliburn (Britten).
H. palliatus Gyll. Cliburn (Britten).
Pityogenes bidentatus Hbst. Tebay (Bowman) Cliburn (Britten).

HETEROMERA.

- Oedemera lurida* Marsh. Witherslack (Day).
Sphaeriestes (Salpingus) aeneus Steph. (*aeratus* Muls.). Melkinthorpe (Britten), Witherslack (Day).
S. castaneus Pz. Tebay (Bowman), Cliburn, Whinfell (Britten).
Rhinosinus viridipennis Steph. Melkinthorpe (Britten).
R. ruficollis L. Melkinthorpe (Britten).
R. planirostris F. Melkinthorpe (Britten), Lowther Park (Day).
Anthicus floralis L. Tebay (Bowman), Melkinthorpe, Cliburn, Glenridding, Pooley Bridge (Britten).
Meloe proscarabaeus L. Tebay (Bowman), Melkinthorpe (Britten).
M. violaceus Marsh. Brothers Water (Wood).
Anaspis frontalis L. Melkinthorpe (Britten), Witherslack, Kirkby Stephen (Day).
A. garneysi Fow. Melkinthorpe (Britten).
A. regimbari Schils. (*ruficollis* Brit. Cat.). Melkinthorpe, Cliburn, Glenridding (Britten), Witherslack, Lowther Park (Day).
A. geoffroyi Müll. Melkinthorpe, Cliburn (Britten), Lowther Park (Day).
A. maculata Fourc. Melkinthorpe, Cliburn (Britten), Witherslack, Gaisgill, Kirkby Stephen, Lowther Park (Day).
A. rufilabris Gyll. Melkinthorpe, Cliburn (Britten), Witherslack, Lowther Park, Ravenstonedale (Day).
Melandrya caraboides L. Ulleswater district (Wood), Rydal (Black).
Gonodera (Cistela) murina L. Witherslack (Day).
Ctenopus sulphureus L. Kendal (Fowler).
Blaps mucronata Latr. Melkinthorpe, Askham (Britten).
Latheticus oryzae Wat. Tebay (Bowman).
Tribolium navale F. (*ferrugineum* F.). Tebay (Bowman).
T. confusum Duv. Tebay (Bowman).
Gnathocerus cornutus F. Tebay (Bowman).

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Dr. E. J. Russell gives an account of 'The Work of the Rothamsted Experimental Station from 1914 to 1919' in *The Journal of the Board of Agriculture* for August.

Part 3 of Witherby's *Practical Handbook of British Birds* (pp. 129-208, 4s.) deals with species from the Rustic-Bunting to the Pied Wagtail. There is an admirably coloured plate showing the heads of various species of Wagtails; another plate illustrates some of the Pipits and Larks, and there are the usual illustrations in the text.

TWO PHYTOPHAGOUS CHALCIDS.

REV. E. ADRIAN WOODRUFFE-PEACOCK, F.L.S., F.G.S., ETC.

ON 30th March, 1919, I tubed up seeds of *Crataegus Oxyacantha* and also of *C. oxyacanthoides*, which had passed through the alimentary canal of the Blackbird, and had been left in a hollow, produced by sar-wood decay, along the whole length of the top bar of old Peppardale House pasture-gate in Cadney parish. On 29th June, 1919, I opened my collection of *Rosaceae* seeds to show the Rev. W. W. Mason, of Melmerby, Cumberland, some typical and off-type specimens. We found in the tube referred to, which was only one of many, a living chalcid fresh from a boring in one of the *Oxyacantha* stones, for I have never yet obtained this chalcid from a *oxyacanthoides* seed. It was exactly like a dead one I had found in one of my tubes, from a seed of the 1917 crop, gathered practically under like circumstances from the dung of a Blackbird. This was provisionally named *Tomyrus elegans* (See *Proc. Ent. Soc. Lond.*, 1918, p. 164)—a name which now appears was not correct, for this living specimen has now been provisionally named *Syntomapsis druparum* Bohem., by Mr. Waterston of the British Museum (Natural History), who has now returned from the war, and is at work arranging the *Chalcidae*. He is much interested in this species, which is known to be phytophagous, and amongst other things feed on the seeds of apples.

I took, on 13th March, 1918, some seeds of *Pyrus acerba*—not the hybrid *mitis*, which has been crossed with garden apples—curiously eaten, from the centre of an apple, which had been on a bush with over thirty others during the 1917-18 frosts, and were yet still fertile. At that early date I only found a larva, not a chalcid, in this apple which showed no external opening. I will go into this matter fully next spring.

These chalcids, I have no doubt, are not difficult to procure, if anyone will take the trouble to collect the nuts of the common white thorn from the droppings of the *Turdi*, especially those of the Blackbird, from gate-post and such like localities, or from the cleaned stones of the gizzard-regurgitated seeds, left by the song thrushes at their drinking places. The stones can be stored in cotton-wool-stoppered tubes or under inverted tumblers.

There is a commoner, but far more minute chalcid, which I now believe to be phytophagous too, specimens of which I have placed in the British Museum of Natural History. It is found on the cottonwool of tubes containing even small gatherings of the seeds of the Rough Chervil (*Chaerophyllum temulum*). They may also be found in seeds kept in the

field paper packets, for I took a second lot in the spring of 1917, from seeds still in paper, gathered for me in 1916, by Miss W. Fowler, then of Liphook, Hants. This chalcid is, I believe, as yet unnamed.

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SOME DERBYSHIRE PLANT GALLS.

JAMES MEIKLE BROWN, B.Sc., F.L.S., F.C.S.
Sheffield.

THE occurrence of plant-galls has received somewhat scanty attention from field-naturalists in this country, though it is difficult to understand the reason, as their study suggests some very interesting problems for solution. With regard to their distribution in Derbyshire for example, but one paper appears to have been published on the subject.*

Some of the gall-causing species, such as *Aulax glechomae*, seem to be rare with us, or at any rate local (on present information), though Swanton found the galls of this species in large numbers at Weston-super-Mare. Many of them, however, are probably ubiquitous, and make their appearance wherever the appropriate host-plant occurs. Thus, on comparing the present list with those of galls noted for the Huddersfield district,† and for the Bridlington district,‡ by W. Falconer, and for South Denbighshire,§ by A. A. Dalman, it will be seen that many species occur in all these localities.

The galls caused by the fifty-two agents named in the following list were all obtained during August last, largely in and about the meadows alongside the River Wye, at Bakewell and in Monsal dale; in the Lathkil dale; and in the Via Gellia, during a short stay in that neighbourhood. Besides these, a number noted at Cordwell, in Ryecroft Glen, and on the moors near Sheffield, have been added. The district thus worked lies to the north of that mentioned by H. J. Burkill, and to the west of that defined by E. & H. Drabble in their paper on the 'Flora and Fauna of N. E. Derbyshire.'|| but overlapping this last for a short distance in the neighbourhood of Cordwell.

HYMENOPTERA.

Cynips kollari Hart. On *Quercus Robur* L. and *Q. sessiliflora* Salis.
Biorhiza pallida Oliv. (*Teras terminalis* Fab.). Old galls were seen on *Quercus Robur* L.

* 'Plant-galls of Thorpe and District,' by H. J. Burkill, in *Journ. Derbyshire Archæol. Soc.*, 1916, p. 29 *et seq.*

† *The Naturalist*, May 1918, pp. 166-168.

‡ *The Naturalist*, December, 1918, p. 384.

§ *The Naturalist*, May, 1919, pp. 164-166.

|| *The Naturalist*, January, 1919, pp. 10-12.

- Dryophanta divisa* Hart. Common on leaves of both species of oak.
D. agama Hart. Common in Ryecroft Glen, at Cordwell and elsewhere.
D. disticha Hart. Plentiful at Cordwell. Flies were emerging on (and probably before) August 20th. Connold describes this gall as 'nowhere plentiful.'
D. scutellaris Hart. (*D. Taschenbergi* Sch. forma *folii* L.). Very plentiful and widely distributed.
Neuroterus numismatis Oliv. (*N. vesicator* Schl. forma *numismatis* Oliv. This gall does not seem to be plentiful in the district. Found at Cordwell.
N. lenticularis Oliv. (*N. baccarum* L. forma *lenticularis* Oliv.). Common and widely distributed.
Andricus fecundatrix Hart. (*A. pilosus* Adl. forma *fecundator* Hart.). Common and widespread on both species of oak.
A. ostreus Gir. On leaves of *Q. Robur* L. in Ryecroft Glen and at Cordwell.
A. curvator Hart. Common and widespread on twigs of oak.
A. inflator Hart. Common.

Other forms of oak-gall, such as those caused by *Neuroterus baccarum* L. and *Andricus quadrilineatus* Hart. occur in the district earlier in the year.

- Pontania proxima* Lepel. Common on leaves of *Salix fragilis* L., etc.
P. pedunculi Hart. This gall seems to me scarce in the district. On leaves of *Salix Caprea* L. at Cordwell.
Rhodites eglanteriae Hart. On leaflets of *Rosa canina* L. Bakewell, Ryecroft Glen, Beauchief and elsewhere.
R. rosae L. Common on *Rosa canina* L. forming the 'Bedeguar gall' or 'Robin's Pincushion.'
Aulax glechomae Hart. This very interesting gall does not seem common in our district. On leaves of *Nepeta hederacea* Tre. in the Via Gellia.
Xestophanes brevitaris Thoms. On *Potentilla erecta* Hampe.

COLEOPTERA.

- Mecinus beccabungae* L. Common on *Scrophularia nodosa* L. in the Via Gellia. No appearance of this gall was seen on *S. aquatica* L. which grows plentifully along the River Wye.

DIPTERA.

- Perrisia fraxini* Kieff. Very plentiful and widely distributed, on leaves of *Fraxinus elatior* L.
P. marginem-torquens Winn. Frequent on leaves of *Salix viminalis* L.
P. ulmariae Brem. Very plentiful indeed on leaves of *Spiræa Ulmaria* L. The majority of the plants along the banks of the River Wye at Bakewell, and the River Lathkil seem to be attacked, many of the leaves being almost entirely covered with galls.
P. veronicae Vallot. Widely distributed and common on *Veronica Chamaedrys* L.
P. crataegi Winn. Very plentiful on *Crataegus Oxyacantha* L.
P. urticae Perr. Plentiful on leaves of *Urtica dioica* L.
P. aparines Kieff. On the inflorescence of *Galium Aparine* L. in Via Gellia.
P. filicina Kieff. Very plentiful on *Pteris aquilina* L. at Holmesfield and elsewhere.
P. viciae Kieff. On *Vicia sepium* L. in Ryecroft Glen, at Beauchief and Cordwell; and on *Lotus corniculatus* L. at Dore Moor.
Oligotrophus annulipes Hart. Very plentiful on leaves of *Fagus sylvatica* L. at Bakewell, Holmesfield, etc.
O. capreae Winn. On leaves of *Salix Caprea* L. at Cordwell.

- Oligotrophus bursarius* Bre. On leaves of *Nepeta hederacea* Tre. in Via Gellia, at Cordwell and Beauchief.
O. taxi Inc. Plentiful on *Taxus baccata* L.
Rhodophaga rosaria H. Löw. Fairly common on *Salix aurita* L. at Bakewell.
Atrichosema aceris Kieff. Galling the petioles of the leaves of *Acer campestre* L. in Lathkil dale.
Rhopalomyia millefolii H. Löw. At the base of leaves of *Achillea Millefolium* L.
Contarinia helianthemii Hardy. On leaves of *Helianthemum Chamæcistus* Mill. in the Via Gellia.

HOMOPTERA.

- Psylla buxi* L. On *Boxus sempervirens* L.
Pemphigus bursarius L. Common on petioles of *Populus nigra* var. *italica* (Moench.).
Aphis pyri Fon. On leaves of *Pyrus Malus* L., at Totley.
A. padi L. On leaves of *Prunus spinosa* L. at Totley and Beauchief.
Brachycolus stellariae Hardy. Fairly common on the upper leaves of *Stellaria Holostea* L.

ACARINA.

- Eriophyes laevis* Nal. On leaves of *Alnus rotundifolia* Mill. Very common. Many of the trees by the River Wye at Bakewell were very thickly galled.
E. nalepai Fock. Also very common on leaves of Alder.
E. brevitarsus Fock. Also on Alder foliage.
E. rudis Can. Common in the buds of *Betula alba* L.
E. Avellanae Nal. Plentiful in buds of *Corylus Avellana* L.
E. tiliae (typicus) Pagn. A very characteristic gall on the foliage of *Tilia europæa* L., Bakewell.
Phylloctes acericola Nal. Very plentiful on the foliage of *Acer Pseudo-Platanus* L. The leaves are often practically covered with the galls.
P. fraxini Nal. Frequently producing rolled and thickened margins to the leaflets of *Fraxinus elatior* L.

FUNGI.

- Cystopus candidus* Lev. On *Capsella Bursa pastoris* Med.
Exoascus turgidus Sad. Forming 'witch's brooms' on *Betula alba* L. and other trees.
Exobasidium vaccinii Wor. Common on the leaves of *Vaccinium Vitis-idaea* L.

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The *Yorkshire Weekly Post* heads an article : ' Is a whale a fish or an animal ? ' But isn't a fish an animal ?

In *The Entomologist's Monthly Magazine* for June is a paper ' On the Aquatic Coleoptera, etc., of the Trent Valley in the neighbourhood of Long Eaton,' by H. H. Wallis, M.A. There is a list of the species found in the area contained partly within the three counties of Derbyshire, Leicestershire and Nottinghamshire. The open-air swimming-bath at Trent College yielded about twenty-five species. Among them was *Dytiscus circumcinctus*, a new record for the Midlands, and *Haliphtus mucronatus*. Among Carabidae which Mr. Wallis obtained were the following new to Nottinghamshire :—*Bembidium articulatum* and *Anchomenus thoreyi*.

COMMON WILD BIRDS OF THE SCARBOROUGH DISTRICT.

W. GYNGELL.

(Continued from page 266).

*The Moor Hen (*Gallinula chloropus* L.). Locally it is quite as often called the Water-Hen. A very common resident bird about every stream and pond that has any sort of 'cover' attached to it. About such haunts its nest is usually placed in or near the water, often on a prostrate tree branch. One nest found was eleven feet above ground, in a spruce fir. In this case, the nest foundation was of twigs, in addition to the usual dead rushes and other soft material. Usually not more than seven eggs are laid. I once found thirteen in a nest, but half of them were fresh and the others much incubated so probably two hen birds were concerned. Eggs vary in weight from .56 to .85 oz. The Moor-hen does not seem to agree well with the Coot, at least this is so at Hornsea Mere where the former is rare and the latter bird abundant. Many Moor Hens frequent Throxenby Mere near Scarborough, and on March 12th, 1899, owing possibly to the great disturbance of the birds' haunts by toad-hunting boys, the birds had all left the Mere and taken refuge in the trees some 200 to 300 yards away up in the wood where I discovered them at about 3 p.m.

*The Coot (*Fulica atra* L.). About twenty-eight years ago, the Scarborough Field Naturalists' Society recorded this bird as 'rare generally throughout the district, though breeding in some numbers at Scampston.' For some years now, it has nested in increasing numbers at Scarborough Mere a very popular haunt many years ago. All nests that I have seen have been in the water up to about three feet deep and composed of dead rushes. Eggs may be found by May 17th. Usually not more than seven; I have found ten in a nest. They are subject to exceedingly little variation in ground colour and markings. Indeed, I should say that in this respect they are less variable than almost any other British bird's eggs that show any markings at all. Perhaps nowhere in England is the Coot more abundant as a breeding species than at Hornsea Mere, where in May, I have seen thirty birds swimming in company. On the Norfolk Broads, even where cover is good, I have been surprised by their scarcity in summer.

The Golden Plover (*Charadrius pluvialis* L.). Best known as a winter visitor in flocks on the lowland fields. In the breeding season, though well distributed over the Moors, the pairs are very few and far between. Eggs may be found in the nest by May 1st. The young in down, to my eye, are more brightly spotted than their parents, are quite conspicuous on the heather and thus anti-protectively coloured. But I know that it is rank heresy to say this. The academic naturalist is a most devoted nurse to theories.

The Lapwing (*Vanellus vulgaris* Bechstein). A resident and abundant bird, locally known as the 'teafit' or peewit. The feeble and rather melancholy night cry may be heard at all times of the year, but the full spring song, Cut-a-coo-ee; Keeta—Keeta, Cooee. I have not heard before March 10th. Eggs locally taken are sometimes exhibited for sale by March 28th. A marked variety that I have known to be found in the district is of a pale bluish ash ground colour. The birds nest upon ploughed fields, marshy carrs and on the high moors amongst short heather. Rarely several pairs may be found nesting in close proximity. In one field and within a radius of fifty yards, I have found five nests all containing eggs on the same day. It is a large egg that weighs one ounce. By July 5th, the pairs have usually broken up and the birds have begun to flock again. On March 4th, 1905, I was much interested in the behaviour of a

pair of birds on a ploughed field. The male flew and twisted about overhead noisily saying all he knew, whilst the female followed his movements on the ground below repeatedly stopping and calling Kee-Kee-Kee-Kee, something like the cry of the Kestrel heard at a distance. And all the time, she was bowing to the ground, raising her tail and slightly spreading her wings most amorously. The Lapwing, besides being a most useful bird to the farmer is often an able assistant to the gamekeeper, the bird by its loud and aggressive call note and movements calling the watcher's attention to undesirable on the land. The night poacher lies low when he hears the teafit.

The Woodcock (*Scolopax rusticula*, L.). Chiefly a winter visitor whose earliest recorded arrival is September 20th. The Woodcock now nests regularly in the district and much more commonly than formerly. I know the bird best in the dusk of an early summer evening when it flies around and over the trees in open woodlands repeatedly calling 'wawk.' The woodcock's egg weighs about three quarters of an ounce.

The Snipe (*Gallinago coelestis* Frenzell). A better known bird than the last, resident and breeding commonly on the moors, carrs and swampy fields very near our town. In spring a score or more birds may be flushed from one small favourite swamp where not more than two pairs may be nesting. The well-known 'drumming' of the Snipe is produced by the rush of air through the bird's quill feathers in its descending flight. I have heard the exact sound reproduced on Scarborough esplanade by the sea breeze passing through the feather in a lady's hat, and a friend who also knows the sound well tells me that he, too, has heard it under similar circumstances. The nest is usually on a tuft of coarse grass no better concealed than a lapwing's, but one I found near here was *well hidden* inside a tuft of long thick grass and amongst sweet-gale bushes. My earliest date for eggs is April 5th. The weight of one is .43 oz.

The Dunlin (*Tringa alpina* L.). A winter visitor in varying numbers. Scarce or abundant according to circumstances. Quite likely it nests in our district but at present it is not known to do so.

*The Common Sandpiper (*Totanus hypoleucus* L.). A summer visitor, most at home 'along the river's stony marge,' and the shingle beds of our moorland streams. Here it breeds in some numbers as well as occasionally by still lowland waters and regularly now near Scarborough Mere. The nest is placed on the flat shingle bed or the grassy slope of the river bank and is made of dead grasses and leaves. The alarm note sounds to me like *pee*, hee-hee, hee, hee quickly uttered, but 'willy wicket,' one of its local names, is suggested by its cry. Eggs may be found by May 10th, the weight of each being .39 oz.

The Redshank (*Totanus calidris* L.). Thirty years ago described as 'rare in summer but fairly common on migration.' This bird now breeds regularly in at least three localities in both the North and East Riding portions of our district. Though quite as noisy it is not quite so threatening as the peewit when the nest is approached. Nests that I have found have been in more or less swampy fields, *in* tufts of grass which partially cover and hide the eggs, but the nests are not so well made as those of snipe or lapwing. It is wonderful what very short grass, under the birds' manipulation, serves to hide the eggs. These vary in weight from .71 to .75 oz. The Redshank often perches on a bush, wooden fence or shed.

The Curlew (*Numenius arquatus* L.). More noticeable than numerous in its wild summer haunts where it may be heard and seen a mile away. Scattered pairs nest annually on our higher moors where the nest of dead grasses and leaves may be found in swampy hollows as well as on dry ridges. The earliest date that I have known for eggs is May 5th. They weigh from 2.50 to 2.88 oz.

The Whimbrel (*Numenius phaeopus* L.). Easily recognised by its whistling call when flying, though not numerous it is very well known here at most times of the year.

The Black-headed Gull (*Larus ridibundus* L.). An abundant bird at almost all times, inland and on the coast but chiefly when wearing its winter white head. A few black-headed birds breed in swampy parts of the higher moors and more would doubtless do so were such haunts less easily accessible. I have never taken an egg in this district, but have seen many hundreds in other counties. Usually three form a clutch, rarely there are four in a nest and they weigh from 1.25 to 1.43 oz. Birds with black heads may be seen as late in the year as November 27th. When in winter this gull associates with other birds in flocks feeding in the fields it seems to be a very irritable creature. It may just tolerate the lapwing, but it bullies the golden plover.

The Common Gull (*Larus canus* L.). A common winter visitor whose earliest recorded arrival is August 7th and whose departure in spring has sometimes been delayed as late as April 8th. Perhaps from fear of the Herring Gull who generally 'bosses' the harbour, the smaller bird usually feeds just off the outer pier.

The Herring Gull (*Larus argentatus* J. F. Gmelin). Resident and abundant in winter and summer, bold and familiar at all times. It nests regularly on the higher cliffs a very few miles both north and south of the town. Usually on the most precipitous portion of the cliffs. Sometimes the nest is built on the grassy slopes easy of access to man from above or below. When obtainable moss seems to be the favourite building material. Eggs may be found by May 6th, and young sometimes seen in the nests at the end of June. The bird's ordinary call note sounds to me like *Kay-ee-yee*; the breeding note, a grand wild sound is a quick cow-wow-wow-wow. These gulls spend a lot of the daylight hours on the fields miles inland and at the first approach of dusk fly seawards in 'skeins' or V-shaped flocks. Thus seen, or in their beautiful aerial gyrations, and indeed at all times this is one of the finest common British birds.

The Lesser Black-backed Gull (*Larus fuscus* L.). A fairly common bird at times from August 7th onwards through the winter, most conspicuous when a few of them are seen in company with more of the last-named species on the sands at low tide.

The Great Black-backed Gull (*Larus marinus* L.). Scarcely to be called common even in the most stormy weather when they come farther in shore.

The Kittiwake (*Rissa tridactyla* L.). Locally called Kitty, this is a common bird in its own particular summer haunts, the chalk cliff ledges, usually low down, at and near Bempton. Here it makes, for a gull, a fairly substantial nest, somewhat comparable to that of the moor-hen. When the disturbed birds fly around an intruder on their haunts they screech what sounds like 'get-a-way-you' to the conscience-stricken culprit. At certain times they may be seen about our harbour, but they are not usually very familiar. The bird's egg weighs 1.60 oz.

The Razorbill (*Alca torda* L.). Locally called the sea-awk. A common resident bird nesting in large numbers at Bempton and adjoining cliffs. Less exposed sites than those chosen by the Guillemot are usually occupied, crevices and hollows under rocks being situations most favoured whilst a puffin's burrow is occasionally shared. An egg weighs 3.11 oz.

The Guillemot (*Uria troile* L.). The 'Scoot' of the fisherman, this bird is extremely abundant on the cliffs between Speeton and Flamboro' in the breeding season and as the egg collectors say that this year 1919 has been a good one, the birds numbers are doubtless well maintained. The Guillemot haunts the bare ledges of the most precipitous cliffs as high up but also lower down, that is, nearer to the sea than the razorbill does. Eggs weigh from 3.75 to 4.50 oz.

The Little Auk (*Mergulus alle* L.). A winter visitor from October 29th to February 25th according to my dates. Usually only odd birds are seen but thousands appear in some winters, and then for some unexplained reason (perhaps they have a 'food controller') many are found dead or dying on the shore.

The Puffin (*Fratercula arctica* L.). A common summer visitor whose haunts are the same as those of the razorbill and guillemot. In sandy slopes the bird, I believe, makes its own burrow which is narrower than a rabbit's. Some sort of nest of grass or straw is made at the extremity of the hole which is often beyond arm's length, though occasionally the dirty egg is within reach. The egg though sometimes scarcely distinguishable from a common hen's egg in size and absence of colour is, I think, never quite spotless, the under surface markings being usually apparent when a blown egg is held to the light.

The Red-throated Diver (*Colymbus septentrionalis* L.). A fairly common visitor, often seen fishing near and sometimes within the harbour.

*The Little Grebe (*Podiceps fluviatilis* Tunstall). Locally known as the dabchick, Tom puddin or puffer. It nests regularly on waters within and near the borough, shifting its ground, or rather water from time to time. The floating nest of dead rushes is usually, but not always, well-concealed. I have found it in quite open water. When the bird leaves her eggs she covers them with green water-weed. An egg weighs .47 to .51 oz. The breeding call note 'uddy-iddy, uddy-iddy,' very rapidly uttered may be heard from March 27th to July 8th.

* * * * *

The weights of the eggs of a few birds not included in the preceding list are, given in ounces, as follows:—Reed Warbler, .65; Golden Oriole, .25; Red-backed Shrike, .13; Blue-headed Wagtail, .065; Cirl Bunting, .11; Ringed Plover, .35 to .39.

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Woodcock near Doncaster.—I have just examined a ♀ Woodcock, shot at Burghwallis. The breast was bare of feathers, but new ones were growing. She was fat and in good condition, and looked as if she had nested here and not like a recent arrival. On the 9th inst. I heard the Chiff-chaff singing at Doncaster.—H. H. CORBETT.

As Woodcocks now nest pretty freely in the County, it may be taken as almost certain this was a local nesting bird.—R.F.

Tree Creeper (*Certhia familiaris*).—On all my rambles this year not a single specimen has been observed. Previously I have invariably turned up an odd nest or two without looking for them specially. A few little plantations near my home generally contain a pair of these interesting birds. I have just returned from a holiday in Wharfedale where it is not unusual to note a few of this species during a few hours' ramble. As time went on, I went out to the likely places in order once more to identify them, but alas without result. The Gold Crest, too, is certainly in very diminished numbers. Just an odd pair in Grass Woods and one only noted at Bolton Woods.—W. H. PARKIN.

In the Harrogate district Tree Creepers have almost disappeared and many familiar nesting sites have not been occupied for the last two seasons. Gold Crests too, in common with many of the small species, have had their numbers considerably reduced.—R. F.

FIELD NOTES.

Palmated Newt (*Molge palmata*) in the Lake District.

—When collecting mollusca of the mountain tarns in the Lake District and North Wales in summer and autumn I have often captured larval batrachians which I could not identify, but which I suspected were Palmated Newts. This suspicion was strengthened this year by finding dead adults—a single male in each case—in three different tarns in the Lake District mountains, Lingmoor Tarn, Langdale, Westmorland, 1300 feet, on June 15th ; Dale Head Tarn, Borrowdale, Cumberland, 1600 feet, on June 21st ; and an unnamed tarn on the Haystacks, Buttermere, Cumberland, 1700 feet, on June 25th. In none of the tarns did I see a living adult, but by the latter half of June most of them had no doubt reverted to the terrestrial life that the breeding-season had interrupted. Entomostraca, upon which the larval newts feed, abound in many of the tarns, and a search in May when spawning takes place would probably show that the Palmated is not only *the* newt of the hills, but is widely distributed.—CHAS. OLDHAM, Berkhamsted, Herts.

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More *Plusia moneta*.—On August 10th last I took *Plusia moneta*, a comparative recent addition to the British list. I took it from a spider's web on a garden wall near the east end of Glen Road, Eldwick. Ever since its first appearance in Britain, about thirty years ago, this beautiful *Plusia* has been extending its range northwardly and westwardly. Another rare insect, or at least one which has been recorded only from a few localities, *Scoparia conspiciualis*, has been rather commoner in the Wilsden district this year than for the previous few years ; indeed, this genus, which is well represented, has, on the whole, been scarce. The small Tortoiseshell butterfly (*Vanessa urticae*) occurred here in thousands in early August, particularly on the high ground where it revelled among the flower heads of the ragwort. In normal years this is a scarce insect. The small Copper butterfly, which in most years is very rare, has also been common amongst the ragwort ; and in my neighbour's garden in June, I took a crippled specimen of the Cinnabar moth, *Euchelia jacobaeae*, which is rare here, for I never have previously taken the imago of this moth.—E. P. BUTTERFIELD.

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British Birds for September contains ' Observations on the Cuckoo,' by E. Chance ; The *British Birds* Marking Scheme—Progress for 1918, by H. F. Witherby ; and The Birds of Bardsey Island, by N. F. Ticehurst. It seems a pity to occupy the first page each month with the list of contents, as these pages do not improve the appearance of the volume when bound up.

BRITISH ASSOCIATION NOTES.

According to the Bournemouth papers, the recent meeting of the British Association was the most successful the Association has ever held. There were nearly 1,500 members and associates present.

Next year the Association visits Cardiff, Edinburgh the following year, and after that, it is hoped, Hull.

Professor W. A. Herdman, of Liverpool, who has been one of the Secretaries of the Association for so many years, is the next President.

The Anthropological Section (H) was described as that which included everything from the Pliocene to the Obscene periods.

Bishop Welldon was frequently seen in 'L,' and spoke there, well.

At the reception, the cream of Britain's intellectual greatness was 'entertained' by a party apparently from a neighbouring Music Hall, who gave 'No John, No John, No John, No,' and other similar treats.

At the same function hats and coats were piled up in heaps on the floor and we hope everybody got the right ones. One well-known member after an hour's search gave it up, but succeeded in rescuing his coat the following morning.

Many well-known scientists were seen wandering round the streets adjoining the Winter Gardens, shouting out for their taxis or cars, while their ladies waited in crowds on the steps of the hall.

Bournemouth has much to learn in little details of this sort.

The gardens were beautifully illuminated, two men-of-war were off the shore, and a sea-plane race gave interest to the visit.

The retiring president spoke rather lengthily, and, to most of the audience, inaudibly, before the new president, Sir Charles A. Parsons, was able to speak.

The weather was perfect, but the work of the Conference of Delegates, and some of the Sections, prevented several members taking part in the afternoon excursions. But the evenings were pleasant and cool.

Science and the War was the subject discussed in the presidential address, and at various sections. Tanks, airships, submarines and paravanes were described in detail, with the aid of cinematograph illustrations.

The magnificent Municipal College, started in 1910 and not yet quite complete, provided the reception rooms, writing rooms, secretarial offices, and accommodation for most of the sections.

Sir Robert Baden-Powell told the story of the unkempt, careless guttersnipe, who turned first into a clean, punctual boy scout, and died as Jack Cornwall, V.C.

The treasurer was well pleased with the financial success of the meeting, especially as an anonymous donor headed a subscription list with £1,000 to replace serious war losses.

The Committee on Photographs of Geological Interest presented its nineteenth report, which included photographs from Cumberland (4); Derbyshire (1); Durham (4); Lancashire (4); Lincolnshire (12); Nottinghamshire (3); and, probably for the first time, none from Yorkshire. The Committee, of which Professor Reynolds, of the University, Bristol, is the Secretary, asks for picture post-cards of geological interest.

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Insects on Sea Buckthorn, by F. V. Theobald; Notes on British Orthoptera in 1918, by W. J. Lucas; and British Braconidæ, by G. T. Lyle, are among the contents of *The Entomologist* for August.

We regret to record the death of Professor F. W. Moorman, of the Leeds University, whose work we recently referred to in these columns. He was accidentally drowned while bathing on the Skirfare, Yorkshire, and the sad news of his death, at a comparatively early age, was received during the meeting of the British Association, where were many of his personal friends. He did much to perpetuate 'the King's English,' and was keenly interested in the preservation of local dialects. His loss is great.

CORRESPONDENCE.

CAUSE OF MELANISM IN *PHIGALIA PILOSARIA*.

IN *The Naturalist* for August, 1919, page 280, Mr. Porritt, whilst admitting the facts in my note, page 279, on Melanism in *P. pilosaria* in this district, denies the inference from these facts and asks :—' But what does Mr. Butterfield mean by saying that he believes "retarded development" to be the cause of the melanism? There is no retarded development, climatic or other, that did not apply to this species fifty years ago, just as it does now,' which statement, as far as the mean annual temperature is concerned, may be true, notwithstanding I am frequently coming into contact with people who declare that the weather has greatly altered since their youth.

Whether this be true or not, it will be admitted by all entomologists that there has been of late years a tendency to melanism in many insects, and that this tendency began at first to manifest itself under conditions associated with a low temperature, and experiments have proved that retarded development of insects in the pupal stage has the effect of darkening the scales of lepidopterous insects, and even in other orders, and if this be true I can well conceive that if unfavourable weather prevails and this is repeated when the insect should emerge, it is likely to remain in the pupa state another year. As already stated, there was little or no tendency to melanism in this species in this neighbourhood previous to the eighties of the last century, after which it began to shew signs of melanism.

The winter of 1879-80 was one of the worst on record, and I believe the year 1881 was preceded by a very cold winter, and I am inclined to the belief in the absence of any other facts that there may be some correlation between this cold weather, which greatly retarded the emergence of *Pilosaria*, and the sudden tendency to melanism.

All causes of variation hitherto known I take to be quite inadequate in explanation of the above phenomenon.

Melanism in this district is shewn most markedly in those species of insect which should usually emerge at the season of the year when retardment in the pupal stage is most likely to occur, viz., early spring. Insects generally which are due about midsummer do not shew the same tendency to melanism.—E. P. BUTTERFIELD, Wilsden.

NEITHER I nor anyone else knows any more as to the cause of melanism in Lepidoptera than we did twenty or more years ago, and that was practically nothing. About that time much discussion on the subject took place in *The Entomologist's Record* and other entomological journals, and a number of theories were advanced, but not one of them seemed to apply to all cases. The summary of my own observations will be found in the Supplement to the 'List of Yorkshire Lepidoptera,' and still more so in the paper I read before the British Association at York some ten years ago, which was published in the Report of that Association. The most generally accepted theory has always been that known as the 'smoke theory.' As melanism chiefly occurs in the manufacturing districts of Yorkshire and Lancashire, it is argued that the smoke, by blackening the trunks of the trees, etc., causes the elimination through insects' enemies of the pale forms, and leaving the dark forms through being less easily seen. But, as I have stated before, that does not always apply, for, in the case of *Acronycta menyanthidis*, a species which occurs in South West Yorkshire commonly, right in the localities where melanism is rampant, it still retains its original pale colour almost entirely (I only know of two melanic specimens having been found in such district). Yet, at Sandburn, near York, and at Skipwith Common, near Selby, where there is comparatively little smoke, the form of this insect is mainly the melanic form. And so with other species. Still, I quite think that smoke is one of the most potent causes, but that possibly different causes account for melanism in different districts.

Mr. Butterfield's theory of retarded development does not work out in general experience. Perhaps the most recent and most rapid case of melanism in this district is that of *Abraxas grossulariata*. A dozen years or so ago the variety *nigrosparsata* was unknown as occurring here; now the district probably produces more of the form than any other area in the kingdom; in one district of the town a considerable percentage of the specimens are of the form, some of them quite black—thorax, abdomen and wing, and many almost black. Yet the larvæ feed up in May and early June, and the pupal stage lasts only about three weeks. And this short pupal stage applies to many melanic species. Nor does the smoke theory apply altogether to *Abraxas grossulariata*, as the form *nigrosparsata* only occurs freely on one side of the town, other parts of it, apparently quite, or still more smoky, producing scarcely any of it though the moth is equally abundant there.—G. T. P.

LARGE PIKE AND HERONS.

THE Squire of Rainworth Lodge, Notts., in *Scribblings of a Hedgerow Naturalist*, p. 70, says: 'Yesterday (June 20th, 1903). I went to see the pond in Berry Hill Park let off; it is about one and a half acres and in one part ten feet deep. We got about forty carp from five to nine pounds, no small one; three tench, largest two pounds, and a small perch. As the pond had not been let off for over thirty years, it is very remarkable that there were no big pike, and none of us can understand the reason why.'

The matter is simplicity itself when you know it. It was explained to me over fifty years ago by the Rev. Robert Sutton of Scawby Hall, Brigg. In very early April I found round the gull pits at least half a dozen pike from five to ten pounds in weight. These, Mr. Sutton explained to me, had been taken out of the shallows by herons. That most ancient and wise of fishermen could not swallow these large fish or cut them into fragments for eating, but he could remove them from the shallows, over which he himself loved to be king in sole sovereignty. When they are regularly removed by fishing herons, no large pike are ever found in ponds.—E. ADRIAN WOODRUFFE-PEACOCK, May 24th, 1919.

It is extremely doubtful if a heron would attack and lift a ten-pound pike; indeed, I should imagine it an impossible feat. Some fifteen or more years ago, I took part in the netting of a large lake at Allerton Park, the seat of Lord Mowbray and Stourton. This lake had always maintained a large head of pike, judging by the sport one regularly obtained. Only a short time previous to the netting, I was discussing the matter with Lord Mowbray, and the subsequent stocking of the lake with trout of the Loch Leven and Rainbow variety, and, whilst conversing, I was casually spinning my bait, casting from the bank, with the result I caught eight pike, without moving more than a few yards. This caused us to contemplate the quality and size of the fish that would be obtained when the netting took place. The lake was drained for some weeks previous to the final operations, the water passing down a small runner into the River Nidd, and incidentally large quantities of eels passed that way also. The mud at the bottom of the lake, the accumulation of generations, was very deep, as we found out when the pools left, after draining away as much as possible, were netted. Immense quantities of roach and rudd were caught and transferred to other lakes close by, also large quantities of tench, one draw resulting in the capture of over two hundred and fifty of these fish, and, strange to relate, they were almost all of uniform size, viz., two and a half pounds. Some large carp were also obtained, the largest weighing over fourteen pounds. These were also transferred to the other waters. The most astounding result was the almost entire absence of pike, very few indeed were netted and these mostly small in size; the only conclusion I could come to was that they

had buried themselves in the deep mud, as there is no doubt the pike were there previous to the draining and subsequent netting, and it is also equally certain they did not get away into the river.—R. FORTUNE.

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STARLING.

REFERRING to Mr. Selous's observations, pp. 167-8, might I suggest as the probable cause that cows, when walking, disturb winged insects, which are thus easier for the birds to catch : also, that they find underground grubs easier under closely-cropped grass. This appears to be the reason in the south, as they follow horses also, but I have never visited the Shetlands.—F. D. WELCH, M.R.C.S., Kent.

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CYPRIPIEDUM CALCEOLUS : EARLIEST RECORD.

REFERRING to the Note in September *Naturalist*, page 282, one can only rejoin that the inference made from the specimen in the John Dalton Manchester Herbarium is very likely the right one ; but undated specimens in herbaria cannot well be quoted as definite dates. For Yorkshire as a whole, the orchid has been known since Parkinson's day (1640) ; but the local ascription in the Memoir quoted is curiously vague—'from the marshes about Arnecliffe,' whereas the Lady in Slippers never affects such places, but only mossy shaded rubbly grips and screes in maquis on a limestone soil.

Again, on page 437 of the flora referred to occurs the quoted curiously differing statement, 'Root from Grassington Wood, 1797, J. Dalton, Herb' ! 'Grass Wood' is only a very few miles away from Arnecliffe, and 'about Kilnsey Crag' is getting 'warmer' still in the slipper hunt. The (probable) exact location nearest Arnecliffe was Sleight's Wood, by the Skirfare, a little above where it joins Wharfe. It occurred here in my earlier days of botanical squirrelity, but for inferrible reasons I don't think this preciser indication has been published.

Again, the Rev. John Dalton had, or made a duplicate *Hortus siccus*. That I quoted was the York one, of the Phil. Society, and in Hy. J. Wilkinson's Catalogue thereof, published, as to the final Part XI. (p. 264) about 1910, appears the 'root from Grassington' entry as, prior to 1887, I took it from the sheet.

This and other explications shall find a place in my 'held-up' chronologic 'Vegetation of Yorkshire' flora, if 'comps' pay and price of paper ever permit my script to see the black of printers' ink. My time feels slipping away.—F. ARNOLD LEES, September 8th, 1919.

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The daily press early in September records a 47-lb. salmon in the Ouse, and a barbel in the same river, weighing 7 lbs. 5 ozs.

The *Forty-eighth Report of the Chester Society of Natural Science, Literature and Art* is to hand, and contains an account on the year's work of the Society and its Museum, as well as a report of the Kingsley Centenary Celebration.

The *Annual Report and Proceedings of the Belfast Naturalists' Field Club* for 1918-19 has been issued, and gives a record of this Society's work up-to-date. The present conditions have necessitated abbreviated reports and brief abstracts of the lectures, among which we notice one on the Fenland of East Anglia, by Prof. R. H. Yapp.

Mr. J. Wilfrid Jackson favours us with a copy of his paper on 'A New Middle Carboniferous Nautiloid,' issued in the *Memoirs and Proceedings of the Manchester Literary and Philosophical Society* (Vol. LXIII., Part 1). In this he illustrates and describes two specimens from the lower Coal Measures near Colne, Lancs., and from the Pendleside Series, Pule Hill, Marsden, Yorks., under the name of *Cælonautilus trapezoidalis*.

REVIEWS AND BOOK NOTICES.

Yorkshire Moors and Sea, by **Ernest E. Taylor**. *Northern Echo* Office, Darlington. 96 pp., 6d. Tourists will find this guide useful, with its maps and illustrations, hints, and descriptions of places in North-east Yorkshire. The author, in his preface, states: 'The whole district is so full of interest for the naturalist and archæologist that I must confine myself to referring him to the individual sections of the Guide.' The archæologist is certainly catered for, but all that *The Naturalist* can find is a repetition of the statement that 'The Botany of the District is given in the V.C.H. [Victoria County History] of Yorkshire,' a work which few tourists are likely to have about with them.

The Flower and the Bee, by **John H. Lovell**. London: Constable, 1919, pp. xvii. + 286, 10/6 net. This is a popular account of flowers and insects, of a very refreshing kind, and deals chiefly with wild and cultivated plants of North America. The author is botanical editor of the A.B.C. of Bee Culture, and he shows a first-hand knowledge of the habits of insects and their work as flower pollinators. The book will be useful to English readers as it deals with many familiar wild and cultivated flowers. It also has the further merit of usually giving the scientific as well as the popular names of the species dealt with and thus confusion is frequently avoided. In this connexion, however, the Common Loosestrife is mentioned under *Lysimachia vulgaris* on p. 112, and *Steironema ciliatum* on p. 201. Bees are not the only insects dealt with, as the book covers all the main types of pollination, even pollination by the wind. There are 119 illustrations from photographs, usually showing the flowers life size, many of which are very successfully reproduced.

Educational Gardening, by **Robert Hogg**. London: A. Brown & Sons, Ltd., pp. viii. and 159, 3s. 6d. net. The author of this little book claims many virtues for school gardening, viz., that it stimulates intelligence, gives ample scope for observation, initiative and discovery: that it provides a good training in patience, perseverance, skill and industry, and correlates intelligently and systematically most school subjects. The useful lists of questions in the book indicate the valuable lessons to be derived from its study, but similar claims may be made of many subjects other than gardening, in all cases much depends upon the capacity and enthusiasm of the teacher, and these qualifications cannot be replaced either by subject or text-book, hence school gardening often fails to achieve the advantages claimed for it. Nevertheless, teachers anxious to make the most of their school gardens will find this book full of useful, practical and reliable hints and exercises. Every branch of the subject is clearly dealt with and illustrated by means of numerous text figures, plans and photographs. The book concludes with fully illustrated sections on Winter Handwork, including the making of almost every garden requisite. The construction of a bee hive is elaborately shown by upwards of seventy figures.

Text Book of Embryology, Vol. II.—Vertebrata, with the exception of Mammalia, by **J. Graham Kerr**. Macmillan & Co., 591 pp., 31/6 net. Naturalists must be grateful to the publishers for producing this valuable volume, with its lavish display of illustrations, at a time when it is so much needed by students, but when the cost of production makes any chance of profit well nigh impossible. As the author points out, it has hitherto been one of the misfortunes of vertebrate embryology that its teaching has been dominated by general ideas based upon insufficient data. In an evolutionary science like morphology the real fundamental principles are to be elicited by enquiry into the more archaic types of existing animal life. It follows therefore, that at the present time with a knowledge of the more archaic sub-divisions of the vertebrata not accessible to early naturalists, it is necessary to regard the historical foundations of vertebrate embryology rather critically in the light of the fuller knowledge of to-day. The author has had at his disposal—for the first time in the history of em-

bryology—developmental material of all three genera of Dipnoi, as well as of *Polypterus*—in addition to the more accessible material of the other archaic group contributed by the Elasmobranchs, Actinopterygian Ganoids, and Urodele Amphibians. This has rendered possible an all-round survey of the problems of vertebrate embryology, for the first time. Quite apart from the extraordinary amount of original work in the book—the copious lists of references to papers and memoirs dealing with each branch of science touched upon, makes the work indispensable.

Botany of the Living Plant, by F. O Bower, F.R.S. London : Macmillan, 1919, pp. x. + 580, 25/- net. Botanists have recently been taking stock of their subject and methods, and have endeavoured to prove their educational and practical value. The general conclusion drawn is that the most useful lessons are those dealing with plants as living organisms, and the title of Prof. Bower's book is suggestive of this spirit. The volume is framed on the lines of the annual course of elementary lectures on Botany given in the Glasgow University. The first 300 pages deal with the morphology, structure and physiology of the flowering plant, the remaining divisions deal in turn with gymnosperms, club-mosses and ferns, mosses and liverworts, and algae and fungi. Two chapters in a general conclusion treat on sex and heredity, and alternation of generations and the land-habit. In addition, there are two appendices. Significantly one of these, 'types of floral construction in Angiosperms,' is a substitute for a systematic section on flowering plants, in which flower types representing twenty-four families are described ; the other deals with vegetable food stuffs. As an elementary statement of the facts, the chapters on the morphology and anatomy of the flowering plant leave nothing to be desired, though the suggestion that the proembryo 'may have a phyletic meaning as indicating an ancestral filamentous constructon' will be regarded by some as straining the point. As may be expected from the author, the summaries of the various plant groups are exceedingly well done. So much, however, can hardly be said of the section on plant physiology, and on the whole, one is more impressed with the morphological and structural aspects than with those relating to the 'living plant.' The chapter on modifications of form in the vegetative system, with a section on plant communities, reminds one more of the lecture-room than the field. This course of lectures shows how over-burdened elementary courses are in our Universities, and it is obvious that the average student cannot obtain an intelligent appreciation of a 'living plant' when required to memorise during a first year's course, in addition to several other subjects, the large field of work here indicated. Nevertheless the volume is a valuable addition to English text-books ; it is well printed and profusely illustrated with 447 excellent figures, a large number of which are original. There is a good index which also serves as a useful glossary. The treatment is clear, quite elementary and written in an interesting style, but the price is that of an advanced work, perhaps an indication of the coming burdens which students will be called upon to bear.

—o—

We learn from the press that a roach weighing 2 lbs. 14 ozs., and 17½ inches long, has been caught in Hornsea Mere, this being the 'record' roach for the Mere.

Sir Henry H. Howorth's presidential address to the Museums' Association, delivered at Oxford, appears in *The Museums Journal* for August, together with an excellent portrait.

The death is announced of Mr. Aquila Dodgson, of Leeds, in his ninetieth year. He took much interest in the work of the Leeds Literary and Philosophical Society, and helped considerably with its coins and antiquities.

NORTHERN NEWS, etc.

Mr. Anthony Wallis, H.M. Inspector of Schools for Cumberland, has died at the age of 40. He was a keen naturalist, was especially interested in botany and made additions to the fungi and grasses of Cumberland.

The Rev. F. D. Morice describes *Lygaeonematus wesmaeli* Tischb., a hitherto unrecorded British Sawfly (from Yorkshire), in *The Entomologist's Monthly Magazine* for October. They were attacking larch trees on the Arncliffe Estate.

From its Report we gather that the additions to the Rochdale Museum during the past year consist of a fine collection of British and Foreign shells, an inlaid oriental table, local prints and photographs, and twenty-two cases of British birds and 'animals.'

The Great Central Railway Company has issued the third edition of 'The Magnet of British Commerce,' containing interesting information and useful statistics relating to Coal, By-products of Coal, Engineering, Electricity, Textiles, Timber and other Industries (pp. 174+cxxxvi. 1s.).

We learn from *The Yorkshire Post*, of September 5th, that a record salmon has been caught in the River Ouse at Howdendyke, near Goole, by a local fisherman, Joe Oldridge. It was fifty inches in length, twenty-seven inches in girth, and weighed forty-seven and three-quarter pounds.

Part 2 of Vol. LXII. of *Memoirs and Proceedings of the Manchester Literary and Philosophical Society*, is entirely occupied by a memoir on 'The Fossil Foraminifera of the Blue Marl of the Côte des Basques, Biarritz' (pp. xxiv.+145, and 9 plates, 8s. 6d.). The illustrations show many extraordinary forms of Foraminifera.

The death is announced of Sir W. H. St. John Hope, Litt.D., D.C.L. He was an authority on heraldry and on monastic buildings and did some excellent work in Yorkshire among its fine abbeys. As Director of the Archaeological Institute and Secretary of the Society of Antiquaries he accomplished much good work in the interests of archaeology. He was born at Derby, in 1854.

The Lancashire and Cheshire Naturalist for August contains a continuation of Mr. J. Wilfrid Jackson's paper on 'Shell-Pockets,' Lepidoptera, by Wm. Mansbridge, note on *Caraphractus cinctus* Hal. in Manchester in 1918, by H. Britten, in which he figures a specimen illustrated in *The Naturalist* some time ago under the name of *Polynema natans*. Mr. G. Bolam records a Bank Vole nesting above ground. Mr. W. J. Lucas has some notes on 'Odonata,' with an excellent figure of *Æschna grandis*. Mr. S. Brade-Birks corrects a previous record he has made, which is unfortunate.

The death is announced of John Hopkinson, F.L.S. He was a native of Leeds, though most of his time was spent at Watford, Herts., where he founded the Watford Natural History Society, and later the Hertfordshire Natural History Society and Field Club. He edited the publications of these societies since their foundation and contributed various valuable publications on meteorology, microscopy, etc., to the proceedings. For many years he has been the secretary of the Ray Society, and under his careful editorship many most valuable monographs have appeared; in connection with some of which we received a communication from him only a few days before his death. He was the founder of the Conference of Delegates of the British Association and, as recorded in our pages, was recently the president. He was an ardent bibliographer, and as such he did much work for the benefit of others. Most subjects dealing with natural history came under his ken and he wrote well on many; but as a capable editor his accomplishments were more than the scientific world usually knows. His early work on the graptolites—a very difficult order—should not be overlooked, but the present writer will ever remember him for his sound advice on scientific publications generally and for his ready willingness to assist a really serious student.

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A MONTHLY ILLUSTRATED JOURNAL OF
NATURAL HISTORY FOR THE NORTH OF ENGLAND.

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THE MUSEUMS, HULL;

AND

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Contents :—

	PAGE
Notes and Comments :— <i>The Geological Magazine</i> ; The Cause of the Crisis; Past and Present; Lancashire Naturalists; Entomological Magazines; <i>The South Eastern Naturalist</i> ; Treasure Trove, etc; Rats; 'Blue John'; Evolution of the Ammonites; Leading Principles; Kelestominæ; Dr. J. W. Evans's Address; Local Geologists; Wasted Energy; North of England Borings; Museums; Prehistorians	345-352
Whitethorn Seed Notes —Rev. E. Adrian Woodruffe-Peacock, F.L.S., F.G.S. etc.	353-355
Additions to the Spiders of Wicken —Wm. Falconer	356
Ornithological Observations and Reflections in Shetland —Edmund Selous	357-360
Some Yorkshire Arthropods —T. Stainforth, B.A., B.Sc.	361-362
Marine Biology at Scarborough —A. I. Burnley	363-364
The Spiders of Yorkshire —Wm. Falconer	365-368
West Yorkshire Botanical Notes —A. Wilson	369
Field Notes :— Common Seals in Morecambe Bay; The Little Owl; Herons Nesting in Nidderdale; Black-necked Grebe in Washburn Dale; Cormorant at Doncaster; <i>Cypripedium Calceolus</i> L.; Size of Specimens of <i>Acer campestre</i>	370-372
Correspondence :— Sounds that resemble —; Blackbirds using the same Nest twice; <i>Cypripedium Calceolus</i> L.; Cause of Melanism in <i>Phigalia pilosaria</i>	373-375
Reviews and Book Notices	355, 372
News from the Magazines	352, 362, 375
Proceedings of Provincial Scientific Societies	364
Northern News	360, 368, 376

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NOTES AND COMMENTS.

THE GEOLOGICAL MAGAZINE.

We learn from the October issue of *The Geological Magazine* that a crisis has arisen in its affairs 'gravely imperilling its future existence,' and unless there is a considerable increase in its revenue, 'the sole alternative is to cease publication at the end of the present volume.' It is an unfortunate circumstance that this crisis coincides with the appearance of the name of Mr. R. H. Rastall as joint editor. To meet the situation the editors propose to raise the price to 2/6 per part, or 30/- per annum. Personally we doubt the wisdom of this course, as a magazine essentially devoted to a special subject is not likely to have an enormous sale, and this gradual increase in the price will surely result in fewer subscriptions.

THE CAUSE OF THE CRISIS.

We learn that the cause of this crisis is 'a further sudden rise in the cost of production.' If this refers to the cost of the printing and paper, we fail to see where it comes in. We know—to our cost—that the prices are now far above the pre-war prices, but there should be no 'sudden rise' at the present time. If anything, owing to the fall in the price of paper, prices should be lower. This is the case in the provinces, anyway, where several London publications are printed. Have the editors considered changing the printers? Such things have been done, with advantage, although we must admit that in the geological world business methods are often found to be sadly lacking. In any case we certainly consider that a few pages less each month would appeal better to the subscribers than an increased subscription. We could well afford to lose the 'Editorial Notes'—a recent innovation—which often mean abstracts of papers which also appear in a number of other publications. There are also numerous papers and lists of titles of papers relating to various foreign countries—which can only appeal to a very few. Why not confine the journal to *British Geology*? For example, take the present part (October), which contains 48 pages. There are 3 pages of 'editorial,' a paper on Iceland, occupying 12 pages; a list of American papers on volcanoes, principally referring to Japan, 2 pages. The other papers consist of 'a remarkable Carboniferous Coral,' by R. G. Carruthers, 6 pages; Morphological Studies in the Echinoidea Holoctypoida and their Allies, IX.—*Pyrina*, *Conulus* and *Echinonius*, by H. L. Hawkins, 10½ pages; 'The Magnesian Limestone of Durham,' by D. Woolacott, 13½ pages; 'The Distribution of "*Terebella*" cancellata,' by F. A. Bather, 1 page; and Correspondence, 2 pages.

PAST AND PRESENT.

We know in these times it is exceedingly difficult to print papers on Geological subjects which can be appreciated by others than specialists, but if *The Geological Magazine* is to succeed, it must endeavour to print more papers of general interest, written in ordinary English language. We are quite aware that all scientific magazines must print some papers which can only appeal to a very few; *The Naturalist* is in this position, but these journals must not be entirely too technical or they will suffer. In recent years quite a large proportion of papers have appeared in *The Geological Magazine* which were probably not really read by half-a-dozen of the subscribers. When we turn back to the early volumes of this journal we find that from cover to cover they contain delightful papers easily read and readily understood, even by an amateur; and these papers were written by the leading geologists of their day. The lengthy articles nowadays appearing, dealing with special subjects, are of course of value, but we certainly consider that a more general interest would be paid to the publication if the long papers were divided, and not more than about eight pages of any particular paper appear in one month.

LANCASHIRE NATURALISTS.

We have received the *Lancashire and Cheshire Naturalist* for September, and October, by the same post. The former contains obituary notices of W. E. Sharp, J. Wigglesworth and S. L. 'Perry.' The last name, which occurs methodically five times, is surely a misprint for Petty. There are many interesting short notes dealing with the counties covered by the magazine, including an elaborate report on Protozoa. In the October number of the same journal, Mr. T. A. Coward gives a list of papers and journals which have been examined in connexion with the Fauna Committee. There are notes on Myriapoda and Diptera, and 'Entomological Notes from Dove Dale, Derbyshire.' In this number under the word 'correction,' it is stated that owing to an unfortunate mistake the name of Mr. S. L. 'Petby' (!) was misprinted Perry. We look forward with some concern to the appearance of the November issue!

ENTOMOLOGICAL MAGAZINES.

During the past few years we have recorded the decease of many scientific magazines—a few, with regret. Some were of good age and, as in the case of *The Zoologist*, supplied a distinct want. To serious students, who are anxious to keep their magazines by them for constant reference, this has come as a mixed blessing. Our entomological friends, however, who have not always money to spare for purchases of this kind,

are very unfortunately placed. There are three monthly magazines to meet their needs—*The Entomologist* (12/- a year), *The Entomologist's Monthly Magazine* (9/- a year), and *The Entomologist's Record* (10/- a year). How each of these has managed to weather the storms of the past few years we do not know, as with the enormous increases in the cost of printing, postage, etc., they must have had a bad time. We have nothing to say against any of the three journals; each is good in its way—each prints original papers on various aspects of entomological science—sometimes referring to foreign countries—each gives short notes on interesting captures, etc.; in fact, each one seems to cover very much the same ground. And the unfortunate entomologist has to spend 31/- a year if he wishes to keep up to date. We do not suggest for a moment that any particular one is better than the others, but we do think it would be an advantage to the magazines themselves, and to their readers, if the three could be amalgamated. If the question of which title is the difficulty—a new title altogether might be given, such as the '*British Entomological Record*.' The editorial and sub-editorial difficulty might be surmounted by forming a Committee from the editorial staffs of the three journals. If such amalgamation is not possible, we would suggest that the three journals mutually agree to follow up some definite line—one for example might be devoted to British lepidoptera and perhaps coleoptera, another to the various other branches of British entomology, and a third to foreign entomology—or some such arrangement.

THE SOUTH EASTERN NATURALIST.*

The South Eastern Naturalist, which is well up to the usual standard, was received by us in September, 1919, and although the editor deplores the 'considerable delay' in its appearance, this does not justify the date 1918 appearing on both the cover and title page. There is an admirable series of reports of the various committees, the Presidential address of Sir Daniel Morris on 'A Chapter in the Geographical Distribution of Plants' [a larger and more definite title is given in the address]; 'Roman Mints in South-east England, by P. H. Webb (this, according to the 'Contents'; the paper itself being entitled 'Romano-British Mints'—which is rather a different subject); 'Mosquitoes [Mosquitoes and Malaria in the paper] in Britain,' by Col. Sir Ronald Ross; 'Meteorological Instruments and how to read them,' ['use' them in the paper itself], by R. Corless, and 'Allotment Pests,' by Lieut. R. W. Ashcroft.

* Being the *Transactions of the South-Eastern Union of Scientific Societies* for 1918, pp. xc. + 104, 3/6.

TREASURE TROVE, ETC.

The remarks in the report on Treasure Trove include some interesting items; for instance, 'Some early eighteenth century tobacco pipes and pottery, *believed to be Roman*, have been dug up on the Barclay estate.' ~~the~~ *The Daily Chronicle* states that 'by ancient law stranded whale is treasure trove.' The list of additions to the library given in the Report still seems to occupy too much valuable space by unnecessary detail.

RATS.

The Zoological Society of London has published a Report on Methods of Rat Destruction, by the Curator of Reptiles. Mr. E. G. Boulenger (18 pp., 6d.). The results of various elaborate experiments in rat extermination are given and the pros and cons of each carefully considered. The following important record occurs:—'We ascertained in the course of our investigations that not only had the Common Brown Rat very greatly increased in numbers in recent years, but that since 1910 the Old English Black Rat had become much more abundant, and in London both species are now in some parts living in harmony, not only on the same premises, but in the same rooms. On the one floor of a factory in Holborn we captured both species of rats, and also specimens of the Alexandrine Rat—the brown variety of *Rattus rattus*, and the black variety of *Rattus norvegicus*. A well-known London rat-catcher, who has kept records of his captures, informs me that he is at the present time catching as many Old English Black Rats as Common Rats in localities where, prior to the War, the latter only were found. This recent increase of the old English Black Rat is disquieting, and can only be checked by the enforcement of stricter measures for their destruction on incoming vessels.'

'BLUE JOHN.'

In Volume CXV. of the *Transactions of the Chemical Society*, Messrs. B. Blount and J. H. Sequeira give details of some elaborate experiments they have carried out with regard to the colouring matter in 'Blue John,' and other forms of Fluorite, from Derbyshire and Durham. From these experiments, it appears that there is no substantial difference between white fluorspar and 'Blue John,' except in respect of the small amount of organic matter which gives the colour of 'Blue John.' The same seems to hold for 'Green John' and for the amethystine varieties. It appears that the colouring matter is, after all, organic. The influence of X-rays and of radium on natural fluorspar appears similar to that on glass. The *causa causans* is unknown. From a series of experiments which have now lasted more than two years, there is no reason

to suppose that what in the earlier trials seemed to be a reasonable hypothesis, namely, that the colour of 'Blue John,' and other varieties of coloured fluorspar owes its origin to radioactive effect, has any foundation.'

EVOLUTION OF THE AMMONITES.

In the *Proceedings of the Geologists' Association*, Vol. XXX., part 2, Dr. W. D. Lang has a paper on this subject, which concludes:—'*Nautilus*, the only recent Cephalopod with an external shell, can be traced back to the Palæozoic, when it had numerous and variform relations. When the nautiloids have been followed backwards through loosely-coiled gyrocones, curved cyrtcones to straight orthocones, *Orthoceras* is still found to be without the calcareous protoconch invariably present in ammonoids. On the other hand, *Orthoceras*, or perhaps an *Orthoceras*-like form, in which a chitinous protoconch had become calcified, gave rise to the straight ammonoid shell or bactriticone, with its ventral siphuncle; and this progressed along many lineages, through loosely coiled mimocones to ammoniticones. Ammoniticone lineages with comparatively simple sutures are Goniatites; and by further complication of the suture-line becomes Ammonites.'

LEADING PRINCIPLES.

'The leading principles exhibited in this evolution are (1) Recapitulation, (2) Orthogenesis and (3) Independence of Characters. Modifications of these have been considered in connection with the evolution of Ammonites as such. Tachygenesis or accelerated development, Lipogenesis or the skipping of stages and Renewed Anagenesis are special modifications of Recapitulation; and Correlation of Characters is a secondary principle imposed upon and modifying Independence of Characters. Catagenesis is seen possibly to have been confused with senility, and not necessarily to be concerned in the causes of extinction. Renewed anagenesis is an expression of the principle of Periodicity in evolution, which in its turn marches with some ideas hitherto considered as belonging to pure philosophy. Finally, it is possible that the complexity of the suture, correlated as it is with great tenuity of the shell, may have some connection with difficulties experienced by the organism on acquiring the habit of calcium-carbonate secretion.'

KELESTOMINÆ.

In *The Quarterly Journal of the Geological Society*, Vol. LXXIV., pt. 3, Dr. W. D. Lang has a paper on 'The Kelestominæ: a Sub-family of Cretaceous Cribrimorph

Polyzoa,' which concludes :—' The Kelestominæ are a sub-family of Pelmatorporidæ characterized by a bifid apertural bar. By stripping the diagnostic characters from the various Pelmatorporid sub-families, a hypothetical Primitive Pelmatorporid is obtained, from which the Kelestominæ (as well as other sub-families) can be derived. Similarly, a hypothetical Primitive Kelestomine may be re-constructed, from which the two Kelestomine genera (*Kelestoma* and *Morphasmopora*) can be independently derived. *Kelestoma* is chiefly characterized by its great œcial length and the large number of its costæ ; and evolution within the genus is mainly concerned with an anabasis of colonial characters and œcial length, and a catabasis of costal number ; and is expressed in the single lineage *K. elongatum*—*K. gradatum*—*K. scalare*.

DR. J. W. EVANS'S ADDRESS.

In his address to the Geological Section of the British Association for the Advancement of Science, Dr. J. W. Evans covered a variety of ground. He considered the methods by which the progress of geological research may be most effectively promoted, and pointed out some directions in which he thought it possible important advances may be made in the early future. It was an amateur geologist, a country solicitor, who saved from the roadmender's hammer the Piltdown skull, that in its main features appears to represent an early human type, from which the present races of man are in all probability descended. Another amateur, who was engaged in the brick-making industry near Peterborough, has provided our museums with their finest collections of Jurassic reptiles. A third, a hard-worked medical man, was the first to reveal the oldest relics of life that had at that time been recognised in the British Isles ; and many more examples could be instanced of the services to geological science by those whose principal life-task lay in other directions.

LOCAL GEOLOGISTS.

' It would be a good plan for the Survey to appoint a local geologist, an amateur or member of the staff of a university or college, in every area of twenty or thirty square miles to act as their representative and as a centre of local geological interest. He would be expected to give his assistance to other local workers who stood in need of it. He would receive little official remuneration, but inquirers in the neighbourhood would be referred to him, and where commercial interests were involved he would, subject to the sanction of the Central Office, be entitled to charge substantial fees for his advice. He would report to the Survey any event of geological importance in the area of which he was in charge—whether it was the dis-

covery of a new fossiliferous locality, the opening of a new quarry, the sinking of a well, or the commencement of boring operations. Many of these matters would be adequately dealt with by local workers, but in other cases it might be desirable for the Survey to send down one of their officers to make a detailed investigation.'

WASTED ENERGY.

'A good illustration, and one of many that might be cited, of the misdirected energy that is sometimes expended in prospecting operations, was afforded a few years ago by a company that put down a boring for oil through more than a thousand feet of granite without being aware of the nature of the rock that was being traversed. In this case a percussion drill was employed, but a few minutes' examination of the material should have enabled the engineer in charge, supposing he had even an elementary knowledge of geology, to save hundreds of pounds of needless expenditure. The sum total of the funds which have been uselessly expended in this country alone in hopeless explorations for minerals, in complete disregard of the most obvious geological evidence, would have been sufficient to defray many times over the cost of a complete scientific underground survey.'

NORTH OF ENGLAND BORINGS.

'In the North of England, again, there are many points where the strata exposed at the surface are low down in the Carboniferous, and it would be comparatively easy to ascertain the nature of the earlier rocks beneath them, with regard to which we are much in need of information. It would be easy to cite other cases where information of considerable geological value could be obtained by boring at comparatively small expense, and would in all probability in the majority of cases lead ultimately to results of economic importance. It is obviously only right that any commercial advantages resulting from investigations carried out at the public cost should accrue to the State, and, if this principle were adopted, expenditure by the Government or geological research on the lines I have suggested would be sooner or later recouped by the mineral wealth rendered available to the community.'

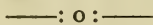
MUSEUMS.

'No less important than the work of the Geological Survey is that of our great national museums. I have already alluded to the need for local collections to illustrate the geology of the areas in which they are situated. The museums of our larger cities and our universities will naturally contain collections of a more general character, but it is to our national museums that

we must chiefly look for the provision of specimens to which those engaged in research can refer for comparison, and it is imperative that they should be maintained in the highest state of efficiency, if the best results are to be obtained from scientific investigations in this country. The ability and industry of the staff of the Mineralogical and Geological Departments of the National History Museum are everywhere recognised, as well as their readiness to assist all those who go to them for information, but in point of numbers they are undeniably insufficient to perform their primary task of examining, describing, arranging, and cataloguing their ever-increasing collections so as to enable scientific workers to refer to them under the most favourable conditions. Even if the staff were doubled, its time would be fully occupied in carrying out these duties, quite apart from any special researches to which its members would naturally wish to devote themselves. The additional expense incurred by the urgently needed increase of the museum establishment would be more than repaid to the country in the increased facilities afforded for research.'

PREHISTORIANS.

The first part of Vol. III. of the *Proceedings of the Pre-historic Society of East Anglia*, has recently appeared (164 pp., 5s.). It is, as usual, crammed with articles dealing with various aspects of pre-historic archæology, and no one can complain of the lack of illustration. We must admit that the figures are of a better type, and that the large out-line drawings which previously marred the pages of this publication have disappeared. The Society seems to cover a larger area than its title warrants, as we find papers dealing with Aberdeenshire, Cornwall, Devon, Sussex and the Continent. That the Society is not prejudiced is shewn by the appearance of two papers on the so-called Rostro-carinate flint implements, which are alleged to be of much greater antiquity than the Palæolithic Age; Mr. F. N. Haward considers that these flints are perfectly natural, while of course Mr. J. R. Moir thinks that they are purely artificial. We must admit that Mr. Haward asks some very awkward questions. There is an admirable portrait and obituary notice of the late Dr. W. Allen Sturge.



We learn from *The Entomologist's Record* that the late F. Du Cane Godman, F.R.S., bore all the expense of the publication of the fifty-eight large quarto volumes of the *Biologia Centrali-Americana*, including the necessary staff of collectors. The type-specimens and series of many thousands of new species described and illustrated in its pages have been presented to the National Museum. His contributions in Lepidoptera alone amounted to 107,000, without counting sundry entire collections separately purchased.

WHITETHORN SEED NOTES.

REV. E. A. WOODRUFFE-PEACOCK, F.L.S., F.G.S., F.E.S., ETC.

THE study of the seeds of *Crataegus oxyacantha* and of *C. oxyacanthoides* is a 'liberal education' in itself, if it is fully followed up, in seed dispersal by bird carriage. It also illustrates the way that certain members of the vertebrata are dependent on one another for food, especially in long snow-frosts like those of the winters 1916-17 and 1917-18.

Take the seeds from the Pepperdale gate top—referred to under my *Two Phytophagous Chalcids* paper*—as an example of what I mean, when the whole country is held fast in the grip of a deep snow-frost. With one single exception, which I carefully tubed up, because it had been blown from the high hedge on the west, and so had not lost its 'pulp,' all the seeds on the top of that gate had been left there after passing through the alimentary canal of one of the *Turdi*. In this case, from what my old eyes have seen after much watching, I do not doubt that of a blackbird. Song Thrushes generally regurgitate them from their gizzard, and as far as I could observe, there was not a single Song Thrush left in the centre of this parish. The few which had not migrated south were on the beck banks feeding on *Helix nemoralis*, as their anvils proved, and only visiting certain bushes of Whitethorn near at hand along with Fieldfare. These species are not gate-top perchers, and not a Redwing could I discover in the parish, and they do not visit gate tops either.

After the droppings on this gate had been broken up by weathering in snow- and rain-wash, a Long-tailed Field Mouse climbed the gate or one of its posts, and opened a number of the nuts to obtain their seed for food. I did not see it there, as it may often be seen in old *Turdi* nests in Whitethorn fences, but its work is so characteristic on *Crataegus*, both species, *Rosa* and *Taxus* seeds, it cannot be mistaken by anyone who has once seen it. Yet how they get the nut out of the minute hole they make I cannot say, for though I have watched most carefully, they would never work on the platform of an old nest in a hedge, when I was standing by to observe them. They simply watched me with curious and fearless gaze apparently.

Then I judge a Hawfinch visited this spot, as also perhaps a Greenfinch too, for most of the seeds were opened by some birds which knew exactly their weak line for cracking them. I say 'perhaps a Greenfinch' advisedly, for the work of the two birds just named is so alike I have only found one means of distinguishing them. The Hawfinch is a master artist at Whitethorn nut opening, and most justly gets its English name from our forefathers having noted its clean work. Like

* *The Naturalist* for October, p. 329.

the Nuthatch, which with a glance at a hazel nut knows whether it has a sound kernel in it or not, the Hawfinch passes from stone to stone opening each in turn without a single mistake. Though I have been a seed student with a type collection of seeds for fifty years, I cannot attain to this proficiency with either hazel nuts or haw-stones. I have never known a Hawfinch glance twice at a haw-nut, which had been opened by a mouse. Now on the gate top referred to, as in many other places, where Greenfinches have been seen at work, were a few shells which clearly showed that they had been opened by a mouse to extract the seed before they had been split by a bird, which I take to have been the more bungling Greenfinch or some other imperfect worker. Both these birds open and eat the seeds in the stones of yew berries, as the mouse does also, opening it in its own particular way, but only where the Greenfinch feeds along with the mouse do yew seeds show secondary working.

Quickfall, now only a personal name I believe—unlike byblow and bastard—is the old English name for haws which have passed through a bird's gizzard. I only once heard it on the lips of a man who was born in 1822. The Rev. Canon J. T. Fowler has shown in the Glossary to *The Fountains Abbey Rolls* (Surtees Society), that our forefathers in the 13th century distinguished between quicksets and quickfall, knowing no doubt, as well as we do, that quickfall was a year in advance of haws sown in their 'pulp,' *i.e.*, if they had not passed through the alimentary canal of a bird. This is my up-to-date list of birds which eat the 'pulp' or the seeds of this species, and therefore sow them:—Blackbird, Bullfinch, Crossbill, Ring Dove, Stock Dove (in snow storms), Fieldfare, Goldfinch, Greenfinch, Black Grouse, Red Grouse (in snow storms), Hawfinch, Nuthatch, when it is short of hazel-nuts, Common Partridge (only in deep snowstorms), Red-legged Partridge, the same, Pheasant every season, Redwing (in snowstorms), Song-thrush the same, Black-throated Thrush (in snowstorms), Mistle-Thrush, Long-tailed Tit, Marsh Tit, Turkey and Waxing Wing. I have no doubt the Rook, Jackdaw and Jay too, but as yet I have no proof. The nuts are, in the case of the smaller birds, carried to new situations and sown, or in that of the larger birds are swallowed and passed without destroying their vitality or that of the Chalcids they may contain. They were formerly fed to Turkeys before being sown to 'gain an entire year in the growth of the quick' (Lyell's *Principles*, 12th ed. 1874, Vol. II., p. 389).

Secondary bird and mammal carriage is also known in this species, for Hawks swallow Blackbirds and other species whole and regurgitate the nuts in their casts. (Darwin's *Origin*, 6th ed., Vol. II., p. 146). Mammals too, as the stoat,

kill Blackbirds feeding under hedges, and drag them to their underground lairs. I have often found whitethorn seed from the crop, gizzard, or alimentary canal, in the refuse of their powerfully odoriferous dens. Also collateral bird carriage, as when it is scattered from the crop of a Ring Dove struck down by a Peregrine Falcon, as I have observed here in and after long snow frosts. It is also carried by millions down our becks, and is the commonest seed found in their alluviums, but never to live, so far as I have been able to observe; and also by the winds universally, as can ever be proved by finding the seed in its 'pulp.' 'Why then,' asked the late Rev. Canon W. Fowler, 'is it so rare in pasture and meadow?' He might have added, road sides and other places that stock reach. For the simple reason, its early leaves are beloved by them, and it is therefore eaten to death. It is sown on our coast meals and inland sand-dunes; and is practically found in every wood where Blackbirds roost. The best example that I know of illustrating what birds and wind can do in the way of sowing—though I have plenty of examples in this parish of Cadney, as also at Crowle and elsewhere—is to be seen on the Keuper marl, on the east side of the Great Northern Railway in the parish of Gamston, I believe, about three miles south of East Retford in the county of Nottingham. This soil 'tumbled down' to 'pasture of a kind' before 1877. Nothing can better illustrate the influence of wind and birds sowing on *Crataegus*; and of how stock later (for years the pasture referred to was not stocked at all), keeps the bushes eaten down, when they can get at them fairly young.

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The Iron and Steel Industry of the United Kingdom under War Conditions. A record of the work of the Iron and Steel Production Department of the Ministry of Munitions. By **F. H. Hatch**. Privately printed for Sir John Hunter, K.B.E., 167 pp. Dr. Hatch has had a glorious opportunity of showing how the great iron and steel industries in this country met with the extraordinary requirements during the war, and of this he has taken full advantage. 'In spite of difficulties which at times appeared to be well-nigh insuperable, Sir John Hunter's Basic Iron Programme obtained a high measure of success, and enabled the urgent and incessant calls for ship plates, shells and other munitions requiring steel in their manufacture, to be punctually and duly met. It is a remarkable tribute to the latent organising power of the nation that, under the adverse conditions of a great war, it should have been possible to raise the steel production of the country to the highest point it has ever reached in the history of the country.' Dr. Hatch's narrative is fascinating—his facts are astounding, and the diagrams and statistics form a worthy record. Illustrations are given showing the various remarkable developments in the iron and steel industries, not the least interesting being two views of the enormous appliance for removing the surface material from the ironstone at Frodingham, which is certainly an advantage over the somewhat primitive methods with which we were familiar in pre-war days.

ADDITIONS TO THE 'SPIDERS OF WICKEN.'

WM. FALCONER.

PREVIOUSLY the writer has recorded 141 species of spiders and 9 of harvestmen for this famous locality.* He can now add 13 more of the former and one of the latter. Two years ago the Rev. J. E. Hull determined and communicated the names of captures made in the fen in November, 1916, by Messrs. M. R. Hull and H. Jeffreys ; four of these, asterisked in the list, were new to it. The rest except one were taken by the writer in September, 1917.

ADDITIONS.

SPIDERS.

Clubiona terrestris Westr. Two ♂s, garden of the Sycamores.

C. reclusa Camb. One ♀ as above.

Tapinopa longidens Wid. Two ♀s, Lepidopterists' Drove ; one ♀ at Wicken lode.

Floronia frenata Wid. Both sexes from sedge litter in the Lepidopterists' Drove ; one ♀ from left side of the fen.

**Linyphia pusilla* Sund. ♂, ♀, the fen.

**Leptyphantes tenebricola* Wid., ♂, the fen.

**Bathypantes setiger* F.O.P. Cb. ♂s, the fen ; previously reported from Co. Carlow, Ireland, Penrith, Staffordshire, Yorkshire and Norfolk (sub. *B. spretus* Camb.) ; not found on the Continent.

**Centromeria bicolor* Bl. ♀, the fen.

Edothorax agrestis Bl. Both sexes beaten from low herbage in the Drove.

Nerienne rubens Bl. Both sexes, the fen and the Sycamores.

Zilla atrica C. L. Koch. Bushes near the fen.

Oxyptila atomaria Panz. The fen, Mr. C. Warburton, in Section Arachnida, p. 199, 'Natural History of Cambridgeshire (Marr and Shipley) ; not a common spider, but widely distributed as far north as Oban and Moray Firth.

Trochosa ruricola De Geer. ♂, ♀, the Sycamores.

HARVESTMAN.

Phalangium opilio Linn. Sycamores.

Of those previously recorded, *Mengea warburtonii* Camb. both sexes, *Wideria melanocephala* Camb., one ♀, and a black ♀ of *Crustulina sticta* Camb. again occurred in the fen ; and many *Oxyptila praticola* C. L. Koch, ♀s, and two of the same sex of *Euophrys frontalis* Walck. were beaten from dwarf box at the Sycamores. The last were of a unicolorous yellow brown, and until examined under the microscope were taken to be a new species. *Zora letifera* and *Neon valentulus* Falcr. and *Marpessa pomatia* Walck. were in abundance in the fen, the Ten Acres and Edmund Fen.

* Vide *The Naturalist*, Oct. 1912 ; June and July 1915.

ORNITHOLOGICAL OBSERVATIONS AND REFLECTIONS IN SHETLAND.

EDMUND SELOUS.

(Continued from page 262).

For the last two days, since witnessing the interesting phenomenon of the congregating and flight of the Kittiwakes, I have come to the same part of the coast, and waited about till the fall of the evening in hopes of seeing it again. Not only, however, have I been disappointed in this, but hardly a Kittiwake in the same stage of coloration and markings as were these birds, is now to be seen, their place being entirely taken by those in the more black-barred and collared state of plumage. The greater number of these, as they fly, seem to have a broad black triangle upon their wings and shoulders. This may not be quite accurate, but it has that effect. What I witnessed, therefore, may have been—probably was—not the gathering of the Kittiwakes to roost, but their much more important gathering previous to migration, and then the migration itself, for it is now, as Hay tells me, about the time of their departure. The state of excitement in which the birds were, their wild clanging cries, making a music in dissonance, the whole general character, in fact, of what I witnessed, is in accordance with this explanation, whilst the marked absence of the like-plumaged birds, now, on but the second day after, is thus simply accounted for. It would appear, therefore, that I have been witness of something very interesting, and which is only to be seen by good fortune. Did the Kittiwakes go to roost in this way, I must have seen the same thing, as also, in all probability, the same birds, to-night, but there was nothing of the sort; no such marked or special feature was discernible amongst them. It would appear, too, that the migration of these birds takes place in the order of their ages, and that the older ones go first.

OCTOBER 23RD.—I went, after breakfast, along the loch, near the voe here, to see if the Kittiwakes were still banded together in any of their gathering places. All were empty, except one at the farther end, where there were just eleven of them, in ripe plumage, with three Herring Gulls—one still brown—keeping them company. Later, I went to the same part of the coastline as yesterday, and now, amidst a great majority of the younger black-barred birds, I could see some grown beyond this. Probably they leave, not only *seniores priores*, but in batches, also, whether young or old, at intervals of a few days, as did the Stone Curlews whose several departures I witnessed when living in Suffolk.

A Herring Gull had found something on the voe beach,

and two cowled Crows (*cucullus non facit monachum*) stood quite near him, watching him eat it, and wishing, evidently, they could do so themselves. The Gull resented their presence, and would, sometimes, leaving his repast, advance against one or other of them, who would, forthwith, retreat, by hops, but with great *sangfroid*, and at no greater speed than was necessary to keep out of reach. Now would have been the opportunity for the other Crow to make a raid on the coveted morsel, but the Gull was aware of this and took care to get back in time, the hunted Crow then instantly returning, to stand close, on one side of him, as his comrade did on the other. Evidently they entertained hopes, but, for all their satanic bearing and suggestion of deep cunning in their every look and movement, as no less when they stood still, the Gull, though inferior in appearances, was, in all else, quite a match for them, and managed to bring his meal to a successful conclusion. He then turned, and was walking, complacently, down to the sea, when one of the Crows, hopping up lightly behind him, gave him a revengeful peck in the back. The indignant Gull turned to resent this injury, but the Crow was already some hops in retreat, with the other prepared to support him, in case of emergency, so, knowing with whom he had to deal, he turned, again, and was soon in the water.

It was a day on two ago that I watched a band of Oystercatchers feeding on the rocks, and presenting a very handsome appearance. If it was not on shell-fish they were feeding, I cannot imagine what else it was, but the beak was not used in any special manner that I could observe—as in striking a sudden blow—but only in picking, pecking and pulling.

Shags are sometimes washed and carried about by the currents of the waves, close to the rock they wish to land on, for some time before they can get up on it. It is odd that they do not under these circumstances, prefer to fly up, but they seem bent on landing from the waves.

OCTOBER 27TH.—What is the percentage of success that sea-birds (Gulls for the nonce) have in their fishing? At Gutter, to-day, I saw one Kittiwake catch, on the third attempt, another on the sixth—except that I cannot be perfectly sure I did not confound this last with another, that, after the third or fourth dive, crossed it in its flight. However, I think it was the same. After this, I watched the general fishing, and saw two catches, and eight plunges, without result, before ceasing to pay attention. It seems evident, therefore, that several—perhaps many—unsuccessful attempts precede a successful one. In the catches I saw—all made by Kittiwakes—the fish was, each time, of a fair size, once, perhaps, double that of a Cornish sardine—so-called—which is as much beyond that of a true two-gold-medal one (if there

are any of these now) as it comes halting after in flavour. Some skill and perseverance was required on the part of the captor to dispose of these *bon-bouches*. One, a good deal smaller, was caught by the tail—just above the caudal fin—and here again care was necessary to get it down head first. But care and skill are both in the Kittiwake's possession, and it cannot be said that any real difficulty is experienced. To catch the fish, however, is a fairly difficult feat, to go by the number of misses which precede success. Here, then, we have, in two elements, a parallel to the well-known Darwinian illustration of competition in speed and dexterity as between the hare and greyhound.

OCTOBER 28TH.—This morning, I watched a Great Black-backed Gull feeding in Cullivoe Bay. His *modus operandi* was exactly the same as the Herring Gull's—that is to say, he rose to a height of some two or three feet from the water, and then plunged head first. He made two or three plunges, apparently to no purpose before bringing up a mass of green seaweed, of the volume, perhaps, of a lady's soaked pocket-handkerchief. Whether he was successful in picking anything out of this I cannot say, and the seaweed itself he consigned to the water again, and, soon afterwards, flew away.

I have now several times, seen a Gull pursued by another one, not a Skua, but in much the same way, and I think, with the same object. More than once, however, it was by one in brown plumage, and, I think, of its own species—possibly, therefore, its own offspring seeking for food in the orthodox manner. Both since and before this, however, I have seen many examples of the first kind of pursuit—which was often successful—amidst crowds of Gulls in Lerwick Harbour. Here the part of pirate and merchantmen was plainly played, both by one or other of the same species, and miscellaneously, between them all, though, on account of the greater number being Herring Gulls, it was usually the first, as it would be, perhaps, in sequence. It is out of this general, undeveloped sort of piracy that the specialised and exclusive kind of the Skuas has, as I suppose, arisen. But in what lay its first origin? I should think, myself, in the chase, for this end, of the parent Gull by the young one. As the latter is fed, habitually, through the act of disgorgement, we have here, from the very beginning, the purpose which is wanted to give the essential similarity between these two kinds of pursuit. At a certain point in the more legitimate one, parental complacency, though now somewhat tried, would be reinforced by the wish to escape molestation in the readiest way, and gradually the latter motive might come to take the place, altogether, of the former one. From this it would be a small step for the importunate offspring to pester birds not

its parents, but so like them that—being probably, by now, accustomed to mingle, in a general way, with its kind—it would no longer seek, or, perhaps, no longer be able, to discriminate between one and the other. The habit being thus more or less established, as between members of the same species, it might, through the intermingling of several begin to pass these limits, and, when once it had, causes would not be wanting to develop and specialise it in this direction. The chief of these is embodied in the scriptural pronouncement (to which, however, the words ‘too much’ must be added) that a house divided against itself cannot stand. If no individual of a gregarious species, could get a meal in peace, for its fellows, that species would wane and disappear, and moreover, a general necessity to do so would have prevented such a state of chaos ever arising. But one species can prey, in this way, upon many, as we see in the case of the Skuas, and might do so, for all that appears to the contrary, upon one only, if this one greatly outnumbered it. In the Shetlands, at any rate, both these limiting conditions conjoin; at least the second one applies to most of the birds so victimised, but, I think, to all. It does not, of course, follow that because this piratical habit might, in the way I have imagined, become fastened by one species upon another, it must therefore be a common one, which, as a matter of fact, it is not. The particular circumstances and individual variations would have, first to arise, but the Skuas are not the only example that we see of it, even in our own islands. The Black-headed Gull, is also a professional pirate, and, so far as I have myself been able to observe, it carries on its trade at the expense of the Peewit alone. And here the interesting point arises that, although, where I have seen this, the numbers of these two species were, perhaps not so very unequal, yet, in the coming into play of the habit, they were, since some three or four—at the most, I should say, half a dozen—of the Gulls divided between them a considerable portion of pasture or arable land on which many Peewits were feeding. In this we seem to see a differentiation of habit as between the individuals of the same species, and change in habit must in time produce a corresponding change in structure, and so (I do not mean specially to apply it to this case; we can imagine others where the principle would be brought more into play) to the multiplication of species.

(To be continued).

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Dr. David Forsyth, who is now seventy-four years of age, has been presented with his portrait on retiring from the Leeds Central High School.

SOME YORKSHIRE ARTHROPODS.

T. STAINFORTH, B.A., B.SC.

Armadillidium pulchellum Brandt. While searching for Coleoptera on Langdale End, near Hackness, Scarborough, towards the end of May, I found three examples of this pretty little pill woodlouse, not previously, I believe, recorded for the county. The specimens occurred together under a stone on Lower Calcareous Grit, the locality being one eminently suited to a limestone-loving species. This isopod has been observed by Mr. R. S. Bagnall in association with *Formica fusca*, but although a neighbouring stone covered a colony of a form of *Myrmica*, I saw no relationship between the ants and the woodlice on this occasion. In his interesting list of 'The Terrestrial Isopoda (Woodlice) of Yorkshire,' Mr. F. Rhodes* states that he has found *A. pulchellum* in the bordering counties of Lancashire, Westmorland and Derby, but not in Yorkshire. The species of *Armadillidium* may be recognised by its small size (5mm.) and by the distal joint of the flagellum being three times as long as the basal.

Among other isopods I have taken during the year are *Cylisticus convexus* De Geer, from Scalby Mills, near Scarborough; *Porcellio rathkii* Brandt., from the East Park, Hull; and Dunswell; and *Armadillidium nasatum* Budde-Lund, from the greenhouses of the East Park, Hull. I am indebted to Dr. W. E. Collinge for the determination or confirmation of the above records.

Polyxenus lagurus L. Further search, during the present year, has proved that the Bristly Millepede is not only common but widely distributed in the East Riding. It still occurs at Brantingham Dale, the first Yorkshire locality in which it was discovered. Mr. E. Bilton found several examples there on May 24th, under the charred bark on the stump of a felled larch. Other localities in which I have taken it are Risby Fish Pond Woods, numerous examples on the posts of the gate leading into the woods; Beverley Long Lane, three specimens under a piece of loose wood on a rotten gate post, on June 21st; near site of Meaux Abbey (also by Mr. A. R. Warnes), numerous examples under loose bark of fence and under bark of a Wych Elm, on September 21st; and North Cliff, one example under loose bark on a gate post, on September 6th. It will thus be seen that it has been found on the Wolds area, as well as both east and west of it, and in the district east of the River Hull.

Miscodera arctica Payk. Towards the end of August, I paid a visit to Allerthorpe Common, near Pocklington, and while searching at the roots of heather was surprised to find

* *The Naturalist*, 1916, pp. 99-102 and 121-123.

a specimen of this beetle. Subsequent search on this occasion and a few days later resulted in the discovery of three further living and one dead example. They were all found partially buried in the sandy soil underneath tufts of heather scattered about a portion of the common which was burnt a few years ago. *Miscodera* is well known as a mountain or high moorland species and as such occurs, perhaps, with greater frequency than is indicated by the records, in the western and northern parts of the county where the habitat is suitable. The occurrence of the species, however, at Allerthorpe Common, which is only at a small elevation above sea level, is somewhat remarkable. It is true that Mr. G. B. Walsh* found the species on low saltmarsh, near Middlesbrough, but here its occurrence could easily be accounted for by the proximity of the high moorland of Eston Nab. Mr. Walsh informs me that the late W. E. Sharp obtained the species on low-lying moorlands in Cheshire.

Carabus nitens L. I made my first acquaintance with this species *in forma viva* at Scalby High Moor, not far from the Druidical Circle, towards the end of May. I am not yet grown too old in coleopterology to appreciate brilliancy of colour, and I felt some of the delight of my younger entomological days on finding several specimens running in bright sunshine over a patch of green Sphagnum moss. Eventually my companion, Mr. G. B. Walsh, and I captured six examples, all of them running about in the sunshine and evidently preferring the damp places.

Later on in the year, at the end of August, I made my second acquaintance with this brilliant beetle, but on this occasion at Allerthorpe Common, in my native vice-county. They were not running about, however, but had to be sought for under tufts of heather just as *Miscodera* noted above. On two days' visits I found five specimens.

Pterostichus lepidus F. In the same locality (Allerthorpe Common) I found two of the metallic species of *Pterostichus*, one of which proved to be *P. lepidus*, the other *P. versicolor*. The former is, I believe, new to the East Riding.

Examples of each of the specimens enumerated have been placed in the Hull Museum Collection.

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Mr. A. Newstead describes *Boarmia biundularia* Esp. form *venosa*, form. nov.; *Biston strataria* Huff. form *ochrearia*, form. nov.; *Crocallis elingvaria* Linn. form *signatipennis*, form. nov.; and *Nyssia zonaria* Schiff. form *ochracea*, form. nov.; in *The Entomologist* for October. In the same journal Mr. H. Rowland-Brown makes 'A Plea for Pioneer Work' which is well worth perusal by all entomologists and collectors.

* Coleoptera of the Grangetown Slag-heaps, *The Naturalist*, 1910, pp. 339-40.

MARINE BIOLOGY AT SCARBOROUGH.

A. I. BURNLEY,
Scarborough.

THE Annual Meeting of the Marine Biology Committee of the Yorkshire Naturalists' Union was held at Scarborough from September 26th to September 29th.

On Friday the 26th, and Monday the 29th, the members investigated, at low tide, two distinct areas in the South Bay, and on Saturday, the 28th, they visited Carnelian Bay.

To enumerate the many living marine organisms, secured or noted, seems unnecessary, as most of the names have appeared in previous reports upon the work of the Committee printed in *The Naturalist*.

Several interesting object lessons in coloration and mimicry in connexion with the communal life of various creatures were particularly instructive. On the under surfaces of large stones were found several varieties of sponges and compound tunicates, with nudibranchs, hydro-zoophytes, and other species of animal life predisposed to such an environment. One of the six or seven sponges seen is a new record, though the species is not yet determined. Of the tunicates, *Polyclinum aurantiacum* and *Botryllus babiis* are new to the county list, and *Aplidium ficus*, though recorded for Filey in 1913, is new to Scarborough. *Leptoclinum durum* was also a new record.

Two living specimens of the small hairy crab, *Pilumnus hirtellus*, were obtained at Carnelian Bay; it had previously been recorded at Filey. The bleached and empty test of the pea urchin, *Echinocyamus pusillus*, was found by Mr. Hargreaves in the South Bay. These empty tests are picked up from time to time, though the living animal has not been reported, and they may be taken as evidence that it exists on our coast.

A perfect and most lively specimen of *Caprella lobata*, figured in Bate and Westwood's 'Sessile-eyed Crustacea' (Vol. II.), hitherto unrecorded for Scarborough, was taken by Mr. Cross. A nemertean worm, *Borlasia elizabethae*, new to this district, is now listed; also the flat worm, *Cycloporus papillosus*, commensal on *Botryllus*.

An unusual find was a patch of what seemed to be mud, on a small *Laminaria* frond which was floating in deepish water over a sandy bottom. The patch was irregularly square and three quarters of an inch long. Magnified, it proved to be a collection of mud tubes, each of which was occupied by a protruding amphipod guarding its progeny. Within this three-quarter-inch square there were one hundred and twenty tubes, somewhat variable in dimensions and arrangement, the average size of a tube being one fortieth of an inch

in diameter and one eighth of an inch in height. This tube-building amphipod, *Podoceros pelagicus*, is a new record for Scarborough. The creature, when extended, measures three-eighths of an inch in length. The tubes, doubtless, are but temporary nests for the young, and are marvellously constructed considering their floating foundation and the peculiar arrangement of the builders' limbs.

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'The Report of the Departmental Committee on Bird Protection' is given as a supplement to *Bird Notes and News*, Vol. VIII., No. 7.

The Brighton and Hove Natural History and Philosophical Society is to be congratulated on its recently issued Annual Report (59 pp.), which contains abstracts of papers, etc., largely of local interest.

The Annual Report of the Manchester Microscopical Society (39 pp., 1/6) is confined to an account of the various activities of the Society in its different sections. There are no papers printed—doubtless owing to the present price of paper, etc.

The Bootham School Natural History, Literary and Polytechnic Society has issued its Eighty-fifth Annual Report. Would that more of our schools could show such a good record of natural history work. Among the various branches of natural history it is surprising again to find that geology is not represented.

Part 1 of Vol. XXX. of the *Proceedings of the Geologists' Association* is almost entirely occupied by Mr. G. Barrow's Presidential Address on 'Some Future Work for the Geologists' Association.' It is accompanied by an excellent coloured map to illustrate the Great Denudation since the Deposition of the High Level (? Pliocene) Gravels.

We have received the *Annual Report of the National Trust for Places of Historic Interest or Natural Beauty*, and from the extraordinary record therein contained, this Society is doing a work which future generations will perhaps appreciate much more than the present one does. It is apparent that quite large areas of some of the most charming pieces of country in the British Isles are now the Nation's property for all time, and the Trust deserves every help and support that can be given to it.

No. 26 of the *Journal and Transactions of the Leeds Astronomical Society* for 1918, edited by Mr. C. T. Whitmell, (Leeds : 70 pp., 2s. 6d.), has been received. Besides the usual Editorial Notes, Obituaries, the Record of the Society's Work, and numerous short notes, the part contains the following papers:—'The Universe of Suns,' by Rev. I. Carr-Gregg; 'The Significance of Parabolic Cometary Orbits,' by Dr. A. C. D. Crommelin; 'Nova Aquilæ, 1918,' by Mr. C. L. Brook; and 'Some Astronomical Discoveries,' by A. Grace Cook. Several of the shorter notes are written by the Editor. Altogether the publication is very creditable to the Leeds Astronomers.

In addition to the interesting Memoir on 'Sands,' by Professor P. G. H. Boswell, referred to in this Journal for October, we have received a series of interesting papers dealing with the subject upon which Prof. Boswell is so great an authority, namely, 'A Comparison of British and American Moulding-sand Practice,' read to the British Foundrymen's Association, Liverpool; 'The Geology of Sands and Aggregates for Concrete Making,' read to the Concrete Institute; 'Ferruginous and Other Bonds in Moulding Sands,' read to the American Foundrymen's Association; and 'British Supplies of Potash-Felspar, considered from the Glass Making Point of View,' from *The Transactions of the Society of Glass Technology*.

THE SPIDERS OF YORKSHIRE.

WM. FALCONER.
Slaithwaite, Huddersfield.

(Continued from page 326).

Gen. *Notioscopus* Sim 1-1.

N. sarcinatus Camb.

Yorkshire is so far the only British county where this rare spider has been found; abroad it occurs in France and Bavaria; in marshy ground. *Adult* autumn to spring, ♀s all the year round.

First record—J. W. Harrison, Eston, 1909.

- V.C. 62.—Cleveland, 'every suitable locality visited, in very shallow slacks on Eston, Westerdale, Gt. Ayton, Easby, Kildale and Basedale moors, also in Farndale, where such slacks contain long reasonably dry tufts of rushes,' J.W.H., *vide* bibliography under Hull and Harrison, and *The Naturalist*, October, 1918, p. 316; Boosbeck.

- V.C. 64.—Sawley High Moor near Ripon, 8 ♀s.

Gen. *Gongyliidiellum* Sim, 3-7.

G. latebricola Camb.

Local and rare, on record for Dorset, Staffs., Cheshire, Northumberland and Paisley. *Adult* autumn to spring.

- V.C. 63.—Honley Old Wood, 2♂s, 8♀s, March 1907, from moss and fallen leaves; Chew Valley (Greenfield), 1♀; Brogden Wood (Soyland), 1♀.

G. vivum Camb.

Uncommon and often rather local, but now noted from eight widely separated English counties, south Wales and more recently Ireland and Scotland; abroad, France and Germany. First occurrence—the author, Drop Clough, July 1900. In this locality it has occurred somewhat freely and numbers of females have several times been seen guarding their eggsacs in little cavities beneath the cover of large stones in the old quarry.

- V.C. 61.—Hornsea Mere, 1♂, 1♀, Houghton Woods, 1 ♀, King's Mill Marsh (Driffeld), 1♂, Hornsea Mere, 1♂, 3♀s, Binnington, 1♀, T.S.; Tunstall, 1♀, E.A.P.; Skipwith Common, 1♂.

- V.C. 62.—Eston, 1♀, J.W.H.; Ringingkeld Bog, 1♂, R.A.T.

- V.C. 63.—Black Hills (Bingley), ♀, W.P.W.; Bottoms Wood, Owlwers Wood, Boothbanks, Ainley Place, Merridale, Royal Clough, Cupwith, Dean Head, in Slaithwaite district; Bury Mill, Scammonden; Ripponden; Drop Clough, Ram Clough and Wessenden Valley (Marsden), Chew Valley, (Greenfield); Marsden Clough (Holmfirth).

- V.C. 64.—Shipley Glen, W.P.W.; Ilkley; Alwoodley Plantation; East Keswick.

G. paganum Sim.

When found, new to the British Isles; in 1907, both sexes, Fenagh co. Carlow; Staffs.; abroad, Southern France and Switzerland.

First occurrence—the author, Drop Clough, February, 1903.

- V.C. 63.—Drop Clough, Marsden, 1♂, 1♀; Ainley Place Wood, 1♀; Deffer Wood (Cawthorn), 1♀; Morton Wood (Holmfirth), 1♀.

- V.C. 64.—Rivock (Keighley), 1♀, W.P.W.

Gen. *Maro* Camb., 3-5.

M. minutus Camb.

The following are the only known stations for this rare spider, which is the type of the genus (*Proc. Dorset F. Club*, 1906). *Adult* males and females (autumn and spring). First occurrence—Drop Clough, March 1905.

- V.C. 63.—Drop Clough, Marsden, 7♂s, 13♀, various dates, occurring only in a space of 2 square yards in made ground composed of stones and soil thrown on one side during the construction of a cartroad to the adjacent quarry; to obtain them it was necessary to break the ground up carefully and search amongst the débris; Scout Wood (Merridale), 1♂, 1♀ from moss; Ainley Place Beck (Slaithwaite), on right bank, a few examples of both sexes, from grass roots, and the Brinks, higher up the stream, year after year.

M. falconerii Jacks.

Described in *Trans. Nat. Hist. Soc. of Northumberland, Durham and Newcastle-upon-Tyne*, New Series, Vol. III., part 1, 1908; on record also for Delamere Forest (Cheshire), Y.N.U., Upper Teesdale, Durham, 1♂; the Rev. O. P. Cambridge had previously examples from Herts. 1♀ and Cumberland, 1♀, but they had been laid on one side and forgotten; recently in the Grampians and Northumberland. Season as in the last.

- V.C. 63.—Drop Clough, 1♂, 1♀, from the same made ground as *M. minutus* Cb. April 27th, 1907 and subsequent dates; Ainley Place Beck; also with *M. minutus* Cb., a few of each sex in successive years.

M. humicola Falcr.

Described and figured in *The Naturalist*, Sept., 1919, pp. 300-1. Closely allied to *M. minutus* Camb., but usually a little larger and with a darker cephalothorax and the epigyne standing out at right angles to the abdomen; frequents humus. Season probably as in the last.

- V.C. 63.—In little recess on right bank of stream between Ainley Place Wood (Slaithwaite) and the miniature ravine, in company with both sexes of the two previous species, odd females each year from April, 1911; Hardcastle Crags, 1♀, April 1915.

Gen. *Erigone* Aud-Sav., 6-9.

E. longipalpis Sund.

Of general occurrence on the coasts of the maritime counties of the British Isles, as well as of North and Central Europe; commoner in the north than in the south of this country. *Adult* April to September. First occurrence—T. Stainforth, Hull, July 1908.

- V.C. 61.—Abundant, Humber mud flats east and west of Hull under plants and pieces of driftwood, Saltend, Marfleet, North Ferriby, Welwick, Stoneferry, Barmby, T.S.; Humber Bank, between Hull and Hessle, E.A.P., T.S., Welton and Spurn, E.A.P.

- V.C. 62.—Coatham Marshes, Marske.

E. promiscua Camb.

Widely distributed in the British Isles and with the other species of the genus frequenting grass, fallen leaves, low vegetation, beneath stones or as aeronauts, usually common; abroad, France and the Continent. *Adult* throughout the year. First occurrence—the author, Slaithwaite, July, 1898.

- V.C. 61.—Barmby on the Marsh, Weedley, Snake Hall Moor, Humber Bank East, Sutton Drain, Kelsey Hill, Withernsea, Hornsea, Sand-le-Mere, Bridlington, Beverley, Brantingham Dale, Hunmanby, Hull, Barmby, T.S.; Saltend, E.A.P.; Spurn and Kilnsea.

- V.C. 62.—Eston Moor, J.W.H.; Cayton Bay, Raincliff Woods and Ringingkeld Bog, R.A.T.; Scalby Mill and coast at Scarborough; Redcar, Marske.

- V.C. 63.—Harden, Cottingley, W.P.W.; Glasshoughton Sewage Works, J.W.H. Johnston; many localities about Slaithwaite, Marsden and Meltham; Outlane; Crosland Moor and Butternab Wood (Huddersfield); Mirfield; Wakefield; Gunthwaite; Deffer Wood.

V.C. 64.—Bishop Wood, Y.N.U.; Roundhay Park, Leeds; Adel Moor, Washburn Valley, Linton Common, Ingleborough summit.

E. dentipalpis Wid.

Common not only in the British Isles and Europe, but also extends to Syria, N. Africa, Azores, N. America and Siberia; adult throughout the year. First occurrence—the author, Slaithwaite, July 1898.

In V.C. 61, 62, 63, 64, plentiful and widespread.

V.C. 65.—Y.N.U., Upper Teesdale.

E. atra Bl.

Like the last extending beyond the confines of Europe to Siberia, Azores and N. America and with the same season. First occurrence—the author, Slaithwaite, March 1899.

In V.C. 61, 62, 63, 64, a common species and recorded stations numerous in all parts.

var. *lantosquensis* Sim.

V.C. 61, Spurn.

V.C. 62.,—Greenhow Bolton and Eston Moor, 'not uncommon.'—J.W.H.

E. arctica White.

Only recently recognised as British, having been confounded with *E. longipalpis*; occurs at various places on the coasts of Dorset, the north of England, Scotland and Ireland, in the last also in one inland locality. The Yorkshire examples have been mainly the var. *maritima* Kulcz., but Mr. Harrison has met with typical *arctica* also in Cleveland. First record—G. B. Walsh, Marton, Cleveland, December 1907.

V.C. 61.—Spurn, rare, T.S.; Bubwith, ♂, J.F.

V.C. 62.—Marton, 1♀, under stack rubbish, G.B.W.; Grangetown to Saltburn, 'abundant,' J.W.H.; Redcar, Coatham Marshes, Tees Mouth; Marske.

V.C. 63.—Castleford and Glasshoughton Sewage Works, many of both sexes, J.W.H. Johnston.

E. spinosa Camb.

The only other British record for this rare spider, which had previously occurred at Cairo, Jerusalem, Rome and Paris, is Lichfield in Staffs., 1♀, vide *Naturalist*, October 1908, pp. 378-9 and p. 385. First record—T. Stainforth, Saltend, May 1908.

V.C. 61.—Saltend Common near Hull, both sexes, May, June and July, 1908, vide H.M.P., No. 59; 3♀s, May 1910, E.A.P., T.S.; 1♂, 3♀s, West ponds, near the embankment, June 1911; 1♂, 1♀, October 1915, T.S.

Gen. *Maso* Sim., 1-3.

M. sundevallii Westr.

Widely distributed in the British Isles as far north as Loch Lomond, and on the Continent, amongst fallen leaves, moss and grass roots in fields and woods; in many places common. *Adult* ♂, May to August, ♀ throughout the year. First occurrence—the author, Merridale, June, 1900.

In V.C. 61, 62, 63, 64., widely diffused and recorded stations numerous in all parts.

Gen. *Hypselistes* Sim., 2-2.

(Gen. *Entelecara* Sim. ad. part).

H. florens Camb.

First described from North America where it is said to be 'common on bushes.' The following are the only European records.

V.C. 62.—Eston Nab, in one of the bog holes on the north slope, first occurrence, October 1909, both sexes, vide bibliography under

heads Hull and Harrison, for figures of ♂ and ♀; a mile also from original locality in 1912. It seems to have established itself in this spot as Mr. Harrison notes its tabloid shaped egg cocoons. For latest notes on this and the next species see *The Naturalist*, October 1915, p. 316.

H. jacksonii Camb.

Rare, discovered by Dr. Jackson in a swamp in the Rhondda Valley, Glamorgan, 1901; since noted for Delamere Forest, Burnham Beeches and Penrith. Adult in autumn.

V.C. 62.—Eston Moor, 'in great abundance in one particular spot,' J.W.H.

Sub.-Fam. LINYPHIEÆ, 81-112.

Gen. *Hilaira* Sim., 2-5.

H. excisa Camb.

This species and the next are mainly northern forms and occur among moss, grass and rushes in wet places. *H. excisa* is on record for Dorset, Cornwall, Glamorgan, Staffs., Durham and Northumberland; Berwick, Paisley and Rothiemurchus; and Ulster; abroad, France, where it is rare. Adult ♂ June to Nov., ♀s throughout the year. First occurrence—the author, Dean Head, May, 1899.

V.C. 62.—Gt. Ayton, Eston and Westerdale Moors, Basedale and Turkey Nab, J.W.H.; Lindale, J.F.; Ringingkeld Bog; Hayburn Wyke.

V.C. 63.—Naylor Rough (Shipley), W.P.W.; Crimsworth Dene, W.P.W., W.F.; in the Calder and Colne Drainage, plentiful where there are suitable sphagnum bogs, less common in other damp places; Slaithwaite; Scammonden, Marsden, Saddleworth, Greenfield, Holmfirth, Shepley, Stockmoor, Meltham, Savile Wood and Pennyspring Wood (Huddersfield); Sun Dean (S. Crosland); Hebden Bridge and Hardcastle Crags; Coxley Valley.

V.C. 64.—Ingleborough, both sexes; Malham Tarn; Adel moor and bog.

H. uncata Camb.

On record for Ulster, Connaught, Aberdeen and Edinburgh, Cumberland, Northumberland, Lancashire, Cheshire, Norfolk, Essex, Staffs. and Dorset; abroad, Central France. Adult ♂ autumn to spring, ♀ throughout the year. First occurrence—the author, Wessenden Valley, Oct., 1900.

V.C. 61.—Hornsea Mere, both sexes, T.S.; Skipwith and Riccall Commons, ♀s.

V.C. 62.—Lonsdale, 1♂, G.B.W.; Turkey Nab, Eston and Great Ayton Moors, common, Basedale, J.W.H.

V.C. 63.—An inhabitant of almost every sphagnum bog in the Huddersfield area, Ainley Place, Slaithwaite Moor, Cupwith, Dean Head, Wholestone Moor, Boothbanks; Drop Clough; Wessenden Valley, Standedge, Pule, Clowes Moor; Chew Valley; Ramsden Clough (Holmfirth); Broad Oak, Linthwaite, both sexes in a dry barn.

V.C. 64.—Elam Wood (Keighley), 1♀, W.P.W.; Sawley High Moor and Brim Bray, both sexes, S.M., W.F.

(To be continued).

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'Fuel Control' is the title of the Presidential Address to the Hull Shakespeare and Playgoers' Society by Mr. T. Sheppard, who happens to be the Secretary of the Fuel and Lighting Committee for Hull.

WEST YORKSHIRE BOTANICAL NOTES.

A. WILSON,
Sedbergh.

YORKSHIRE MID-WEST, V.C. 64.

Cnicus pratensis Willd. This occurs in fair quantity (but not flowering much owing to being eaten down by sheep) in a rough pasture near Lower Bentham, where grows a white-flowered form of *Primula farinosa*. The locality is about a quarter of a mile from the Lancashire boundary. I believe that the only record previously for this vice-county is in the extreme east, viz., 'marshy fields bordering Askham Bog,' (see 'Flora of West Yorkshire,' p. 279).

Gyrophora cylindrica Ach. This grows on a large detached Yoredale grit rock on the south end of Greygarth Fell at about 1,900 feet altitude. The plants are small, but characteristic. Not previously recorded for 'West Yorks.,' but it occurs in Teesdale in Yorkshire north-west, V.C. 65.

Placodium cirrochroum Hepp. This lichen (easily recognised by the citrine-yellow soralia) is abundant on a limestone scar near the foot of Kingsdale.

YORKSHIRE NORTH-WEST, V.C. 65.

Erigeron acre L. On Great Scar Limestone near the foot of Garsdale, August, 1919. Not previously recorded for the Lune drainage area.

Urtica urens L. By a farm in Howgill. An addition to the Lune area.

Salix herbacea L. Very fine on Millstone Grit rocks, north side of Dent Crag (Yorkshire side of Barbon High Fell), July, 1919.

Malaxis paludosa Sw. I counted 48 plants this year (1919) in the locality near Sedbergh, where I found it a year ago.

Listera cordata Br. Amongst heather, Frostrow Fell, near Sedbergh, July, 1919.

Neottia nidus-avis Rich. About 20 plants growing near together in a shady wood on the bank of the Rawthey, near Sedbergh, June, 1919.

Chara fragilis Desr. In a small tarn on Holme Fell. An addition to the Lune area?

Splachnum ampullaceum L. Boggy field near Gawthorp, Dentedale, July, 1919.

Parmelia pubescens Wain. (*P. lanata* Wallr.). On Millstone Grit rocks below the scar on Dent Crag. New for West Yorks. I believe (see 'Flora of West Yorks.,' p. 642.).

Diploschistes gypsaceus Zahlbr. (*Urceolaria gypsacea* Ach.). On limestone rocks in Uldale, Baugh Fell.

FIELD NOTES.

MAMMALS.

Common Seals in Morecambe Bay.—For some peculiar reason the appearance of a seal in Morecambe Bay is of very rare occurrence. I was informed by several Morecambe fishermen that until the present season it was about twenty years since they had seen one in the Bay. On Sunday, July 27th, a Seal was watched for some hours swimming about off the stone pier at Morecambe. As the tide went out the Seal entered the fish-baulks opposite to Sandylands, and no doubt temporarily enjoyed a great feast, until it was captured and brought ashore. It was purchased by three working men for £3, and was exhibited by them as a sideshow, as “The Baby Sea-lion caught in Morecambe Bay, Admission 2d., including Entertainment Tax.” I found it to be a half-grown female Common Seal (*Phoca vitulina*), probably between two and three months old. Within a fortnight of capture it became very tame and docile, and would allow itself to be handled by its owners, and when out of the water, it would hold up its flipper when asked to ‘Shake hands.’ They fed it on small fish that were left stranded in the baulks, and although it appeared always to be hungry yet it resolutely refused to take any kind or size of ‘flat-fish.’ It grew perceptibly during the fortnight that I had it under observation, and appeared to be in good health. Although the ground colour of this seal was the usual grey, it shaded into a distinct orange-brown on the back of the upper neck and the top of the head. Since the above was written I have seen a note in *The Field* of Sept. 13th, 1919, p. 378, under the signature of Col. J. E. Willan, from which I take the following extract: ‘On September 4th, John Wilton, a fisherman, of Silverdale, caught a Common Seal (*Phoca vitulina*) uninjured in a tide-net. It was partly grown and only about 32 ins. in length. He carried it home on his back, and put it in a boat filled with water.’ I at first thought the young Morecambe Seal may have escaped, or had been liberated; but on making inquiries found that it was still in captivity towards the end of September. Silverdale lies almost at the extreme head of Morecambe Bay.—H. B. BOOTH, Ben Rhydding.

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BIRDS.

The Little Owl.—As the spread of the Little Owl is a matter of some concern to lovers of our native fauna, it may be worth while to record that it appeared in the neighbourhood of Bridgnorth, Shropshire, some two years ago, and was found nesting at the Croft, near Morville, during the past spring by Mr. T. H. Robins. The nest, in a hollow tree, was at first

supposed to be that of a Brown Owl and the real occupants were not discovered until they were ready to fly. When Mr. Robins found what they were he shot one of the young ones (Sept. 2nd) and sent it to me. It was fully fledged, but unmistakeably only just out of the nest. As quite a number of Little Owls have been seen in the vicinity it is probable there was a second nest somewhere near.—FRANCES PITT.

Heron nesting in Nidderdale.—It can do no harm now to record the fact that two pairs of Herons nested in Ridding's Gill, in the years 1914 and 1915. Unfortunately war-time measures subsequently resulted in the felling of the timber there, and the prospective new heronry was destroyed. It might be interesting to note that some of the trees when measured were found to be a hundred and twenty-five feet high.—R. FORTUNE.

Black-necked Grebe in Washburn Dale.—A pair of Black-necked or Eared Grebes (*Podiceps nigricollis*) frequented the reservoir at Fewston for over a fortnight last May, and would probably have stayed to nest, did not the receding waters make these sheets of water rather unsuitable sites for breeding purposes. At the same time seven Great Crested Grebes were to be seen on the same waters. This species endeavours to nest almost every season, but their efforts are usually futile, for the above reason.—R. FORTUNE.

Cormorant at Doncaster.—For the past three or four weeks a Cormorant has roosted every night on the north-west pinnacle of the tower of the Parish Church here. From the amount of whitish colour on the breast, it appears to be a bird of the year. It arrives at its roosting place every evening at about sunset. Yesterday (October 11th) I saw its arrival. It first appeared at a great height and circled round the Church three or four times, gradually getting lower. When at the level of the top of the tower it made a feint of alighting but passed on for one more fly round. Finally it landed with out-stretched wings against the side of the finial and thence, with many flounderings and flapping of wings, climbed to the apex. Here it at once settled down, preening its feathers and looking around it. Its presence has caused much excitement in the town, hundreds of people going to look at it, and all manner of wild rumours are current. A few days ago the Vicar, Archdeacon Sandford, met me and said: 'Eh! 'av yer seean t'eagle? Eh! its got wings nine foot long, an' its got a bairn oop theer, it belongs a woman i' 'Igh Fishergate, an she's i' sich a way abart it, an' that lazy Maister Marsden (the Verger) weant goo up an' fetch it darn fur 'er.—This is what I am hearing in my parish. Can you explain it?'—H. H. CORBETT.

BOTANY.

Cypripedium Calceolus L.—The mention of this rare species in the October number of *The Naturalist* calls to mind that in the Flora of West Yorkshire, p. 436, there is a note from Blackstone (1740) that a 'Mr. Thornbach . . . informs me that it has been lost in Helks Wood for some years.' It may be of interest to say there is a specimen from 'Helks Wood, Ingleborough, June, 1840,' in Winch's Herbarium, formerly at the Linnean Society, but now, I believe, at Newcastle. There is a note in *The Naturalist*, 1902, p. 120, 'Helks Ingleton (plenty) 1782.—Rev. W. A. Shuffray.'—A. BENNETT, October 6th, 1919.

Size of specimens of *Acer campestre*.—As some authors speak of this plant as 'a shrub,' and others 'a small tree,' I should like to enquire whether specimens I mention below are of common occurrence in the British Isles. Two growing in a sheltered valley, west of Louth, near a stream, have the following dimensions: (a) 63 inches round trunk, 4 ft. from ground; (b) 54½ inches. Both are from 36 to 40 feet in height. In the same valley, a *hawthorn* is about the same height, but the main trunk has bifurcated near the ground, both limbs running up very close together at first, and round the point of juncture, about 2 feet above the ground, the measurement is 70 inches.—J. LARDER, The Museum, Louth.

—: O :—

Structural Geology by C. K. Leith. New York: Henry Holt & Co., 169 pp., 8/6 net. This work is a little late in reaching us but is a welcome volume on this particular aspect of geology. By the aid of numerous diagrams, plans and sections, and illustrations of practical experiments the student should be able readily to form an idea of the various structural changes in the geological history of the world.

Fossil Plants—A Text Book for Students of Botany and Geology, Vol. IV., Ginkgoales, Coniferales, Gnetales. By A. C. Seward. Cambridge: University Press, 543 pp., £1/1/- net. We can quite believe that it is 'with a certain sense of relief' that Professor Seward has concluded what he calls a 'text book,' though the four volumes appear to form a palæobotanical monograph. There are nearly 200 illustrations and by their aid it can be safely stated that the latest researches in fossil botany are here summarised, in addition to which are the results of Professor Seward's life's work. An idea of the scope of the work can be gathered from the fact that the Index of Genera alone occupies fourteen columns, while the index of names of plants, etc., described in Volume IV. alone occupies 30 columns, and the list of works referred to in the text of Volumes III. and IV. (other than those included in Volumes I. and II) occupies 50 pages. It will thus be seen that the literature relating to fossil botany is enormous, and probably no one knows it so well as the author, and few have added to it so serviceably. Professor Seward hopes to supplement these volumes by a general review of the Floras of the Past which 'will be published as an independent work,' though personally we think it should form another volume in the admirable 'Cambridge Biological Series.'

CORRESPONDENCE.

'SOUNDS THAT RESEMBLE ———.'

READING a certain article in the September number of *The Naturalist*, I was strongly reminded of the melodious (?) voice of a certain animal which, according to tradition, once protested against chastisement by its owner, saying 'Am I not thine ———'; and which is, by some people, considered as a sure indication of a downfall in the near future from the watering pot of Jupiter pluvius.—MARK L. SYKES.

—o—

BLACKBIRDS USING THE SAME NEST TWICE.

MR. H. B. BOOTH (see *The Naturalist* for September, page 302) records the Blackbird utilising one nest for the rearing of two broods in one season. This year a Blackbird laid its eggs twice in one nest, which was built near the Council School in the village, but whether both clutches were the produce of one female I am not in a position to say, since I was not informed of the event until it was too late. A few years ago a Song Thrush laid twice in one nest, which was built in a garden in Thornton, and probably both clutches in this case were laid by one female.—E. P. BUTTERFIELD, Bank House, Wilsden, Bradford, 2/9/19.

—o—

CYPRIPEDIUM CALCEOLUS L.

RESPECTING the interesting notes in *The Naturalist* for September, p. 282, I venture to say that Dr. Lees, in his 'Flora of West Yorkshire,' p. 436, gives a very complete history of *Cypripedium Calceolus* L. in West Yorkshire. I am looking forward to the publication of his 'Vegetation of Yorkshire' to reveal additional information about this and other interesting plants. The *Hortus siccus* referred to by Dr. Lees in *The Naturalist* for October, p. 341, was presented to the Yorkshire Philosophical Society, York, in 1827, by the Rev. James Dalton, M.A., F.L.S. (1764-1843), who was the godfather of Sir Joseph Dalton Hooker, and who was the first to record *Scheuchzeria palustris* L. for Britain.

The Herbarium of John Dalton mentioned on p. 282 was formed by John Dalton (1766-1844), Chemist; pupil of John Gough (see Biographical Index of British and Irish Botanists compiled by James Britten, F.L.S. (1893), p. 44). I cannot find any family connection between the John Dalton, Manchester, and James Dalton, York, although I believe they corresponded with each other.—HENRY J. WILKINSON, York, Oct. 15/19.

—o—

CAUSE OF MELANISM IN *PHIGALIA PILOSARIA*.

IN view of the extreme importance of this subject I should like to refer to Mr. Porritt's remarks in reply to my notes in *The Naturalist* for October, 1919, pp. 339-340. Mr. Porritt, I presume, will not deny that there must be a cause for this melanism, and that it is comprehensible, or else it would be better to cease making any further investigations into the matter. As far as *P. pilosaria* is concerned, at least for this district, the 'smoke theory' as an explanation of the cause of melanism utterly breaks down. The dark or black forms of this moth in this district are not less, but more easily seen when at rest on the trunks of oak trees, which is the predominant tree in Bingley Wood, and therefore the dark forms are less protective than the type. According to my experience *pilosaria* has not very many enemies when it is on the wing, which is roughly in February; the Titmice, perhaps, are the worst, and their attacks are chiefly confined to the wingless females. *Pilosaria* did not show any tendency to melanism until the year 1880 or thereabouts, after which it began to change rapidly, but this melanism did not synchronise with any increase of smoke in the atmosphere. Indeed, there are grounds for believing that there was actually less smoke in this district

at the first appearance of melanism than previously, since the local authorities were beginning to bring more pressure to bear on the mill owner to abate the smoke nuisance. If we assume the 'smoke theory' as an explanation of the cause of melanism, its operation must be due to natural selection, according to which, as Darwin informs us, works by exceedingly small and almost invisible transitions, which is in strange contrast to the case under discussion, which changed suddenly. Mr. J. W. Carter, of Bradford, and I, spent a few days at Grassington last September, and Mr. Carter called my attention to *Polia chi*, which was not at all uncommon in that locality, and made the remark that it was very true to type, and not so inclined to melanism as in this neighbourhood. The explanation was to be found, perhaps, not because there was less smoke than here, but because the district generally was at a much lower altitude. I think there can be no questioning the fact that this species here is much more inclined to melanism in the higher than in the lower altitudes, and the same remarks, I think, applies to *pilosaria*. Mr. Porritt remarks that my theory of retarded development does not work out in general experience, and then quotes a recent and most rapid case of melanism in the Huddersfield district, namely, *Abraxas grosulariata*, where a dozen years ago the variety *nigro-sparsata* was unknown, now the district probably produces more of this form than any area in the Kingdom; he also quotes *A. menyanthidis*, a species which occurs in South-west Yorkshire commonly, right in the localities where melanism is rampant, it still retains its original pale colour almost entirely. The latter insect, *menyanthidis*, has of late years shown a marked tendency to melanism in this neighbourhood, whilst the variety *nigro-sparsata* may be after all associated with a low temperature, for I am not in a position to say what a prolonged low temperature may have on a caterpillar, whilst in a hibernating condition. I am quite sensible of the fact that my theory does not cover all cases of melanism, but the broad fact remains that the tendency to melanism began to show itself first in high latitudes or high altitudes. Even in Britain, at the present time, melanism is much more marked in the north than in the south, in the mountainous districts than in the plains, and I think there can be no denying the fact that this melanism manifests itself chiefly in those insects which are due on the wing when the weather is most likely to retard their development in the pupal stage, that is, in early spring and autumn. I am prepared to face the fact that there may be and are exceptions to this theory, but in these matters we must not infer the general from the particular, but *vice versa*. The average size of the dark forms of *pilosaria* is inferior to the size of type—a fact one would naturally expect to follow on retarded development. I think Mr. Porritt will not deny that melanism might be artificially produced, at least to some extent, by subjecting pupæ to a prolonged low temperature. From what little I know of physics I should have thought that a low temperature brought to bear on the pupal stage of an insect would have had the opposite effect, that is a whitening effect, but such is not the case. Most of the melanism which has arisen within recent years has been associated with a low temperature. It certainly has not been associated, nor originated in the warmer parts of the country where melanism has made such rapid strides.—E. P. BUTTERFIELD, Bank House, Wilsden, Bingley, Oct. 8/19.

It is a surprise to me, as I fancy it will be to most lepidopterists, to read that the melanic form of *Phigalia pilosaria* is more easily seen on oak trunks than is the type. On the pale oak trunks, no doubt, all the forms of the species are readily seen, but here the melanic form is largely found on the black trunks of beech, sycamore, hawthorn, etc., where it is infinitely less conspicuous than is the type form. Mr. Butterfield is mistaken in saying that melanism is much more marked in the mountainous districts than in the plains. Where it does occur in mountainous

districts in Yorkshire and Lancashire it is almost always in the vicinity of large smoky manufacturing districts. It occurs scarcely at all in the still more mountainous districts of the Lake District, nor in such districts in Scotland; indeed, in Scotland, the lepidoptera are usually quite as pale as in the south of England. I well remember with what astonishment I first saw *Acronycta leporina* on sugar, at Rannoch. The moth looked absolutely white, and was as pale as any south of England specimen and altogether different from our smoky form. Another instance is in the pure white ground coloured *Chelonia plantaginis* var. *hospita*, which is abundant on the mountains of the Lake District, but is never seen in the high districts of Yorkshire, where the ordinary form is common. The whole subject has to be looked at broadly and universally. I am not arguing that the 'smoke theory' covers all cases—it does not; but the 'low temperature' theory does so I think even much less, though possibly it does account for some, as for instance *Polia chi*, the dark forms of which have been noticed to be commoner in dull wet years than in bright dry seasons.—G. T. PORRITT.

—:O:—

The Irish Naturalist for September contains a paper on the 'Relation of Song to the Nesting of Birds,' by J. P. Burditt.

Those interested in Museum News should read an article 'Museums, Education, and the Board,' in *Nature*, October 9th.

In *The Irish Naturalist* for July-August there is a portrait and an obituary notice of the late William Spotswood Green, also notes on the Wren, by J. P. Burditt.

A damaged *Choerocampa nerii* is recorded at Huddersfield in September (*Entomologist's Monthly Magazine*, October). There is only one previous record of this species for the county, which occurred at Sheffield in 1867.

British Birds for October contains some excellent illustrations of a sparrow-hawk and its young, with notes, by J. H. Owen; a report on the recovery of marked birds; The Birds of Bardsey Island, part 4, by N. F. Ticehurst, and several short notes, including one on the status of the Yellow Wagtail in Westmorland.

According to *The Quarry* a Slate Company at Bethesda is utilizing slate waste for the manufacture of bricks, cement, asphalt, abrasive soap, glass, linoleum, paints, distemper, slabs, tiles, insulators, disinfectant powders, toilet powders, glass bottles, erasing rubbers, distemper washes and pottery. We feel relieved that foodstuffs were not included.

Science Progress for October contains the usual review of current scientific literature written by specialists; reviews, correspondence, and the following articles:—'Optical Activity,' by Dr. F. D. Chattaway; 'Impact Testing of Metals,' by Mr. F. C. Thompson; 'The Capillary Circulation,' by Prof. W. M. Bayliss; 'Pure Science in Relation to the National Life,' by Prof. A. Schuster; 'The Nutritive Value of Feeding Stuffs,' by Mr. J. A. Murray; 'Detoxicated Vaccines,' by Dr. D. Thomson; 'Dust Inhalation and Miner's Phthisis,' by Mr. H. W. Davies.

Volume XIX., part 1, of *The Essex Naturalist* is to hand and contains quite a valuable series of communications, mostly bearing upon the county. Among these we notice—'A Whirlwind and Wind Rush at Gosfield on 26th July, 1918,' by A. C. W. Lowe; 'Hornets, Wasps and Flies Sucking the Sap of Trees,' and 'Samuel Dale (1659?-1739) of Braintree, Botanist, and the Dale Family,' by Miller Christy; 'Climbing of the Water Shrew,' by Fred J. Stubbs; 'A Three-Spurred Form of the Larger Butterfly Orchis,' by G. Lister; 'Three Old Essex Herbaria' and 'Some Essex Plant Records,' by W. G. Clarke; and 'Supplemental Report on the Lichens of Epping Forest,' by Robert Paulson and Percy G. Thompson. In addition to these there are reports, on the Club's meetings during 1918-19, Mr. W. Whitaker's Report on the Conference of Delegates of the British Association held in London in July, 1918, and a note on a 'Pied Blackbird from Warley Place.'

NORTHERN NEWS.

An invitation has been sent by the Hull City Corporation for the British Association to visit Hull in 1922.

Such is the popularity of the Museum of Fisheries and Shipping at Hull that a 6th edition of the Illustrated Guide has just been published, the list of exhibits being brought up to date. (A. Brown & Sons, Ltd., Hull—price 3d.)

The death is announced of Prof. F. Haverfield, the authority on Roman remains, who for a considerable number of years has been looked upon as our greatest expert, and has assisted in excavations and in deciphering inscriptions in almost every part of the country. Many valuable catalogues and other works stand to his credit, and there is no doubt the position he occupied will be difficult to fill. He was present at the Museums Conference held a little while ago at Oxford, and then seemed to be in his usual health.

Mr. Heywood Sumner, F.S.A., has produced a *Descriptive Account of the Roman Pottery made at Ashley Rails, New Forest* (London: Chiswick Press, 37 pp., 2s. 6d. net.), in which he describes an interesting find of some kilns and accompanying earthenware of Roman date, and gives some valuable details of the manufacture and ornamentation of the Pottery and of the kilns in which it was baked. The pamphlet is illustrated by a number of exceptionally charming maps and views, and also by several sketches shewing details of the different kinds of Pottery excavated. In addition there is a geological map of the district.

A remarkably fine coloured plate of various species of Tits, as well as a plate of Wagtails, another of Tits, and numerous illustrations in the text, appear in part 4 of Witherby's *Practical Handbook of British Birds*. Judging by the detailed descriptions of the various species and sub-species of these birds, it would seem that the list of *British Birds* is likely to be considerably extended before the handbook is completed. From a careful perusal of the descriptions, we fear that the distinguishing features of some of these so-called sub-species or varieties are rather minute, and it is just a question whether in this particular case the handbook will be helpful to ornithologists or whether it will confuse them.

The Annual Meeting of the Hull Scientific and Field Naturalists' Club was held on September 24th. The Annual Report pointed out that the times of reconstruction were affecting the affairs of local societies. In some degree the year passed had witnessed a rebuilding of the society, for most of the younger members had now returned from the army. Meetings had been held on nearly every Wednesday evening during the year. An outstanding feature of the year had been a keen interest in outdoor natural history work, as had been proved by the interesting and numerous exhibits brought before the meetings. An exceptionally large number of new members had joined during the year. The officers elected for the ensuing year were:—*President*, Mr. T. Stainforth, B.A., B.Sc.; *Vice-Presidents*, Miss L. Stevens and Messrs. M. Ling, C. F. Procter and F. Turner; *Committee*, Mrs. B. Cook, Miss L. Martin, Mrs. A. R. Warnes and Messrs. B. Cook, G. R. Cook, W. C. England, G. L. Harrison, H. Knight, C. W. Mason and W. G. B. Page; *Recorders*, (Microscopy) H. M. Foster, (Photo-Micrography) Dr. J. Hollingworth, (Chemistry) A. R. Warnes, F.C.S., (Vertebrates) C. F. Procter, (Protozoa) W. H. Arnott, (Mollusca) J. W. Boulton, (Lepidoptera) J. Porter, (Coleoptera) E. Bilton, (Arachnida and Myriopoda) T. Stainforth, (Flowering Plants, Ferns and Algæ) J. F. Robinson, (Mosses) T. Dennis, (Fungi) W. Robinson, D.Sc., (Geology) T. Sheppard, M.Sc., F.G.S., (Palæontology) M. Ling, and (Photography) S. H. Couldwell. Mr. T. Sheppard was appointed Editor; Mr. F. Turner, Lanternist; Mr. T. Brogden, Treasurer; and Mr. C. F. Procter, Secretary. The name of the retiring President, Mr. J. Porter, was added to the list of Past Presidents.

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Contents :—

	PAGE
Notes and Comments :—Bournemouth Naturalists ; The Cheviots ; Lincolnshire Naturalists ; Liverpool Naturalists ; Roman Brooches ; Hull Naturalists ; East Riding Antiquaries ; Odonata	377-380
Ornithological Observations and Reflections in Shetland—Edmund Selous	381-385
Yorkshire Naturalists at Spurn—T.S.	386-389
Yorkshire Naturalists' Union—Botanical Section—C.A.C.	389
The Distribution of <i>Gentiana verna</i> —F. Arnold Lees, M.R.C.S.	390-391
Plant Galls from the Scarborough district—Wm. Falconer	392-393
Additional Yorkshire Diptera—Chris. A. Cheetham... ..	394-395
Fungus Foray at Helmsley (1919)—A. E. Peck	396-399
Field Notes :— <i>Xiphura atrata</i> L. in Yorkshire ; <i>Sympetrum sanguineum</i> Müll., a Dragonfly new to Yorkshire ; <i>Cypripedium Calceolus</i> —Earliest Record for England	380, 399
The Spiders of Yorkshire—Wm. Falconer	400-403
In Memoriam :—Thomas Boynton, F.S.A. ; Thomas Hey—A. E. Peck	404-405
Correspondence :—Large Pike and Herons	405-406
Yorkshire Entomology—B. Morley	407-408
Reviews and Book Notices	393
Proceedings of Provincial Scientific Societies	391, 408
News from the Magazines	406, 408
Northern News	385, 391, 395, 408

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NOTES AND COMMENTS.

BOURNEMOUTH NATURALISTS.

We have received Vol. X. of the *Proceedings of the Bournemouth Natural Science Society* (79 pp.) which gives a record of the Society's work during 1917-18. It is fortunate in having Sir Jethro J. H. Teall as President, and the proceedings contain two of his papers, 'Some Aspects of Egyptian Geology,' and 'The Evolution of Igneous Rocks.' A fair proportion of the other notes relate to the Bournemouth area, and among the abstracts printed are 'The Mistletoe : Its Life History and Associations with Primitive Religion, Folk-Lore and Superstition,' by Sir Daniel Morris ; Analyses of Local Waters, by A. J. Tyrrell ; Anopheles in the Bournemouth Area ; and reports on the work of the various sections. Judging from the publication before us this Society is doing excellent work, and is apparently very well supported locally.

THE CHEVIOTS.

Sir Jethro Teall's paper already referred to is accompanied by Microphotographs [? photomicrographs] of rock sections, one being of Hypersthene-augite-andesite. Cheviot Hills $\times 30$. 'The larger constituents are labradorite (colourless), hypersthene (grey with dark patches due to alteration) and augite (grey with parallel lines representing cleavage planes). The groundmass or matrix contains small feldspars, grains of augite, etc., and a considerable quantity of glass which can only be distinguished under a higher power. This rock is of Devonian age, but it is a common type in Tertiary and recent volcanoes, especially those surrounding the Pacific Ocean.'

LINCOLNSHIRE NATURALISTS.

The Transactions of the Lincolnshire Naturalists' Union for 1918 (pp. 99-142) contains the Rev. F. L. Blathwayt's presidential address on 'The Birds of Lincolnshire, Past, Present, and Future' ; 'Birds of Skegness and District,' by Frank Hind ; 'Anopheline Mosquitoes of Lincolnshire,' by W. Wallace, and sectional reports of the year's working, as follows :—Botany, Rev. A. E. Woodruffe-Peacock ; Conchology, J. F. Musham ; Entomology, G. W. Mason ; Vertebrata, Rev. F. L. Blathwayt ; Geology, H. Preston. There are one or two shorter notes, including a note on 'The presidents (*sic*) of the Lincolnshire Naturalists' Union, Miss S. C. Stow,' and an Obituary notice of W. D. Roebuck, and the Secretary's Report.

LIVERPOOL NATURALISTS.

The nature of the contents of the *Proceedings of the Liverpool Naturalists' Field Club* for the year 1918 is

explained in the sub-title, 'With President's Address, account of the excursions, and notes of the botanical work of the year, List of prize winners, and names of Hon. and ordinary members' (46 pp.). The President's address is by Mr. W. S. Laverock, of the Liverpool Museum, who gives a few practical hints on 'The Collecting of Flowering Plants and Ferns, and the making of a Herbarium.'

SEDBERGHIAN SEDGWICK SOCIETY.

We are glad to find that the Sedgwick Society in connexion with the Sedbergh School, has published a magazine, the first part of which is for the October term, and is before us. It contains an editorial note from which we gather that last season the Society had 250 members, more than 75 per cent. taking an interest in natural history or photography. There are some interesting notes on the work of the summer term, on the lectures and meetings, and on finds and captures. There are records of birds, moths, plants, etc., but in view of the peculiar geographical position of Sedbergh it would be more valuable in case of really important records, if the exact locality and date were given in each case in future. We also hope the editors will give a short history of the Society since its formation. We trust that the little magazine will appear regularly and no doubt in time it will form a receptacle for many valuable records relating to the Sedbergh area.

ORNITHOLOGICAL BIBLIOGRAPHY.

Part I of 'A Geographical Bibliography of British Ornithology from the earliest times to the end of 1918. Arranged under counties, being a record of printed books, published articles, notes and records relating to local avifauna, by W. H. Mullens, H. Kirke Swann and Rev. F. C. R. Jourdain,'—a title which fairly well describes the scope of the work, will be completed in six bi-monthly parts, the first of which (Witherby & Co., 96 pp., 6/-) has been received. It begins with a list of general works of reference, which includes the titles of about a hundred and fifty publications, the first being Turner's 'Avium Praecipuarum,' of 1544. In the list are some recent 'books' which we were at first surprised to see quoted at all, but we suppose bibliographers must not discriminate. Following, are the lists for Bedfordshire (5 pp.); and other counties, in alphabetical order, up to Essex; Cheshire occupies 8 pp., Cumberland 7 pp., Derbyshire 8 pp., and Durham 6 pp. The paper upon which the book is printed, when cut, resembles a roll of cotton-wool.

PROF. J. E. MARR, SC.D., F.R.S.

We are pleased to learn that Prof. J. E. Marr, Sc.D., F.R.S., of Cambridge, has accepted the invitation of the Yorkshire

Naturalists' Union to be its President for 1920. Prof. Marr is well known to our readers, and his fine work in the Lake District and in the north-west corner of our county makes us look forward to his address next year with unusual interest. Prof. Marr's popular lectures, his numerous popular handbooks on geological and geographical subjects, and his scientific knowledge generally, more than justify his name being added to the list of those who have occupied the Presidential Chair of the Yorkshire Naturalists' Union.

ROMAN BROOCHES.

In *The Transactions of the Cumberland and Westmorland Antiquarian, etc. Society* (N.S. XIX.), the late F. Haverfield describes 'The Tullie House Fibulae,' from which it would appear that the Roman brooches found in the Carlisle area bear a striking resemblance to the collection from South Ferriby,* and evidently indicate contemporary occupation in the two areas. We certainly think Haverfield was in error however, in describing his fig. 17 as a 'Zoomorphic fibula . . . no doubt some animal was represented, perhaps a fish.' We think it clearly represents the sole of a sandal; a precisely similar brooch was found at South Ferriby; another is figured in May's 'Warrington's Roman Remains,' and others are recorded elsewhere. In the same publication C. R. B. McGilchrist writes on 'The Roman Road in Eskdale,' though both the editor (W. G. Collingwood) and F. Haverfield, are not inclined to accept all the conclusions arrived at. There are other papers of antiquarian interest.

HULL NATURALISTS.

Vol. IV. of the *Transactions of the Hull Scientific and Field Naturalists' Club* is completed with part 6 just to hand (A. Brown & Sons, pp. 281-348, 41-), which, in addition to containing detailed reports of the Club's work between 1912 and 1918, (thus bringing the narrative of the Club's history to date), also contains the title page and index to the volume. Mr. T. Stainforth writes on 'The Thomas Stather collection of Lepidoptera,' which includes many interesting particulars of early East Yorkshire records of butterflies and moths. Mr. T. Sheppard follows with a lengthy paper on 'Our German Ancestors: being an account of the Anglo-Saxon Remains found in East Yorkshire.' This paper has its humorous element, but at the same time contains details of the Anglo-Saxon relics of the district. The publication is well printed and we are glad to see that the Hull Society is able to continue its valuable work.

* See Hull Museum Publications, Nos. 38 and 39.

EAST RIDING ANTIQUARIES.

The Transactions of the East Riding Antiquarian Society, Vol. XXII. (pp. xxiv+81) contains the following papers: 'Documents at Everingham,' by Rev. C. V. Collier; 'Danes' Dyke, Flamboro,' and 'Whaling Relics,' both by the Editor (Mr. T. Sheppard), and the report of the Secretary, Rev. A. N. Cooper. Among many shorter, though none the less interesting, papers, we notice 'The Spalding Gentlemen's Society's Minute Book,' 'The Old Hull Grammar School;' " 'Assize of Bread;' 'A Hull Silver Tankard;' and 'Local Archæological Notes,' all of which are well illustrated. The Society has also issued, separately, the Index to the first twenty volumes of its transactions, by the late J. C. Cox (24 pp.) We certainly think this system of issuing separate indices to a series of volumes is an admirable one.

ODONATA.

We have received a reprint of Mr. W. J. Lucas's paper on 'The Odonata of the Lancashire and Cheshire District,' from *The Lancashire and Cheshire Naturalist*. On a comparison with the 'List of Yorkshire Odonata,' it is interesting to note that exactly the same number of species is recorded for both districts—twenty-one. And as might have been expected, they are pretty much alike. In the Lancashire and Cheshire list are four species not yet recorded for Yorkshire, *Sympetrum flaveolum*, *Orthetrum caerulescens*, *Cordulia aenea* and *Erythromina naias*. On the other hand, four species have been recorded for Yorkshire which are not in the other list, *Sympetrum sanguineum*, *Libellula fulva*, *Anax imperator* and *Brachytron pratense*. We believe we have seen *O. caerulescens* on the wing on Strensall Common, but failed to catch a specimen for confirmation. And it is equally likely that *B. pratense* occurs in the Lancashire and Cheshire area. A valuable feature of Mr. Lucas's paper is the full-page plate containing the specially fine enlarged figure (with details) of the nymph of *Aeschna grandis* from a Manchester specimen, a complete description of which appears in the text.—G.T.P.

—: o :—

Xiphura atrata L. in Yorkshire.—At the meeting of the Entomological Section in Leeds, Mr. B. Morley exhibited a fine female of this large dipteran. It is a striking and handsome species and a notable addition to the Yorkshire lists which previously only possessed a single and very old record of any of the species of the Ctenophora Mg. group of Tipulidæ. Mr. Morley took the specimen on June 9th, 1919, in Edlington Woods.—C. A. CHEETHAM.

ORNITHOLOGICAL OBSERVATIONS AND REFLECTIONS IN SHETLAND.

EDMUND SELOUS.

(Continued from page 360).

My slight contribution to that kind of natural history to which the humble word 'field' is prefixed, ends here with the trip which produced it. I brought nothing else back with me. I collect habits only, since, for me, the unnecessary taking of animal life, at least in its higher developments, is simply murder. Why should it not be? The human character of much that I saw—especially in that incident of the Gull and two Crows—will hardly be disputed. Let us suppose it granted, and that I had concealed myself behind a rock, with that gun which, for more than thirty years, now, I have regretted ever once having carried, and shot these birds. It would seem to follow that I should, in that case, have killed beings very human in such and such a way, and I ask how would that have differed, essentially, from killing human beings. Unessential differences are not really differences at all, and what other ones are there here? What are they, these differences? There is that of form, but the latter-day naturalist knows that, by a process of generation and development, common to man and birds, one form has passed into another, not only in that chain, the links of which are free-moving species and varieties, but also in that other one where each individual has itself mounted up through these species, to be born, as it were, into its own.* Man being, as yet, at the end of the chain, it is hardly possible to kill any form of life without taking human life, at one or other of these stages. No essential difference, then, in the field of comparative enticide, insofar as the form—the structure—goes. But the mind?—the degree of intelligence? That, however, is included in the evolution of structure, either as a mere function of, or, at least, as dependent on the state of some part of the latter. The kinship, therefore, is not dissolved in this factor, so that if, notwithstanding, we make it the criterion of the nature of killing, deeming that a greater or less degree of intelligence constitutes it murder, in the one case, and an innocent act in the other, then, in the latter category, we should place the killing of all babies, as well as that of many adult human beings, less intelligent than dogs or even birds, and for whom there is no development. But we call wilful baby-killing murder, as such, nor would the plea of unintelligence in the victim, avail, with judge or jury, for the destroyer of the very feeblest-minded, at any age. Moreover, as every

* See 'The Descent of Man,' Ch. i., with fig. 1 in illustration.

species has sufficient intelligence for its needs, since it could not otherwise have been evolved, to urge this plea would be equivalent to a presumptuous or childish arraignment of nature herself, indistinguishable from blasphemy, or, at least, from absurdity, which is as far as we need here follow it. Clearly, then, this point of distinction is as meaningless, and therefore untenable, as it would be arbitrary.

We may cudgel our brains as we will, but, the more the matter is looked into, the more does it become apparent that the killing of any being—not merely of any human being—can only really be justified by the strength of the reason for doing so, *i.e.*, through necessity; and when we think of the pain which is often inseparable from the act, of the well-being and happiness, the affection, the tenderness, even—*experto crede*—which, by it, we destroy, and of the absence of all crime and wickedness in those non-human lines thus made to cease, reason no less than morality, must tell us that such necessity ought, by no means, to be lightly admitted, but only on the same principles and with equal reluctance as we admit it for ourselves. To act on the assumption that man—just one being—can, simply for his pleasure,* yet morally, sweep other beings out of existence, is, for us, at any rate, who are not Huns, to drop ethics, in practice, as it likes us, whilst still illogically maintaining that might is not right. How can one be moral in patches?—I mean, of course, rationally, for, in fact, that, at best, is what we are.

It may, perhaps, be argued that if guilt really attended the unnecessary taking of non-human life, so moral a product as civilised man could not, possibly, sin comfortably, as he notoriously does, in this way. But let those who may be inclined to reason thus, consider that this same moral being has, at various periods of history (if indeed not always) been equal to performing this apparently difficult feat, even as against his own species, not individually, merely, through a long line of murderers, but collectively, in the shape of the average man. The Spartans, though homely, were acquainted with virtue, and deeply religious, yet, on but slight consideration they would put their Helots to death, without scruple—at least moral scruple—whilst the Greeks, as a body—even the Athenians—were accustomed to slaughter their prisoners. If not always, yet it was commonly done, and was not, apparently, thought immoral. The Romans, in their prime and vigour, were a moral people, yet they daily enjoyed the public spectacle of men forced to butcher each other as experts, and held down their thumbs† in sign that

* 'Or *slight* profit, at any rate, I would add.'

† Or up, but the point is immaterial.

butchery should take place without any 'compunctious visitings of conscience.'* The Spaniards, when they discovered America, were a brave, high-souled people, with no lack of other fine qualities. Yet in Cuba alone, they soon got rid of twelve million Indians (more than the Herreros) and Las Casas has told us how they did it.† Then, not so far back, there was Negro slavery (approved, in its day, by the rigidly moral, and still regretted by many); later still the Congo and Putomayo, the Germans as colonists, and lastly, this fiend-enkindled War. Clearly then, if, in a human being, the moral sense can become hopelessly atrophied, in regard to large sections of fellow human beings, it is absurd to suppose that it cannot become equally so where animals, merely, are concerned; and this is, in fact, the only explanation of the way in which wild animals are treated by us, unless we draw a distinction between atrophy and non-development. Considering, however, the feelings which we lavish on our dogs, cats and horses—creatures not more intelligent and suffering no whit more than their wild representatives—it seems doubtful if this distinction exists, or if it does, then perhaps it does equally in many of the *inter se* cases.

But what is non-development but that state at which atrophy arrives?—or atrophy but the point from which development begins? Both, in this connexion, mean moral insensibility, and I maintain that it is moral insensibility alone‡ which can make the sportsman blythe and gay amidst the tortures he inflicts and the innocent happiness he destroys. It is not lightly that I maintain this, for I have gained the knowledge through my own proper experience. So long as my mind was quite aloof from that of the beings I meddled with, whose path I merely crossed, they were but points within the periphery of what was my natural, and seemed, therefore, my legitimate field of pleasure; but when I began to watch them with intensity, seeking to penetrate the causes of their actions through the teachings of evolution, which now, all at once, seemed to pass from books into being, then each one of them became a centre of intellectual and, also, to a high degree, of sympathetic interest, and whereas it

* See Cicero, who was a kind and gentle master to his slaves, yet enjoyed these entertainments, though the Greeks—prisoners notwithstanding—did not, but thought them horrible.

† As much as he has been allowed to, that is to say, for the powers, I understand, that be, and were, in Spain have never, from patriotic motives ('tis an ill bird that fouls its own nest') permitted the whole to be printed. If so, then what has been passed by the censor arouses speculations truly awful, since, what with all-night roastings and the cutting off the arms of live children to feed dogs (bloodhounds) withal, it does not seem easy to transcend this.

‡ I include in the term those for whom natural history means killing.

had seemed nothing, before, to bang a mere bird into nothing, it came to me, now, as something monstrous, and only befitting a savage, to annul all that that I knew a bird to be and contain, merely because it was a bird, and not human. For a bird has apt intelligence, quick sensibilities, lively emotions, affectionate solicitude, parental and conjugal devotion and tenderness, love of and pride in its family, heart-overflowings, cheerfulness, triumphings, serenity, comfort, contentment, the joy of life—consciousness too. All this we know, or may know through our reading,* but it is one thing to read it, quite another to see it in action. When one does so see it, and keeps seeing it—day by day, hour by hour—(for the mind is not ‘dyled by its thoughts,’ all at once) inevitably that process begins and goes on in one which is known as ‘entering into,’ without which and the dread of public opinion, enforceable by the gallows, many a man would as cheerfully shoot other men as pheasants and be as pleased with his skill in doing so. Indeed we see this in all wars, for these curbs being then (however high-mindedly) withdrawn, natural repugnance, which, were it more strongly developed, might be a sufficient one, passes away. Having gone through such a process,† then, I can, on the principle of *cogito, ergo sum*, speak to its reality, and since it is one from callousness to sensibility, from destruction to observation, from the cramped application to ourselves and our *protégés* only of what we call ‘the golden rule,’ to its reasoned extension to embrace all sentient existence, it must, as I hold, be along the path of development. If so, it would surely become the civilised man to crush down and stifle in his heart that joy to slay wild animals, which once, through necessity, a hardy virtue, is now by lapse of time and changed conditions, become a mere stupid barbarity, linking him, through the chain (and chains) of heredity, to far-off savage forefathers ‘with foreheads villainous low.’

This path lies open, and it can hardly be doubted that

* I may quote a fellow bird-watcher who is also a man of science. Professor Julian Huxley, writing in ‘The Auk’ of April 1916 (‘Bird-watching and Biological Science,’ pp. 147-8) says: ‘Those who wish to penetrate into those arcana and mysteries of science, where the beginnings of consciousness are being shaped and added to life, cannot do better than observe the behaviour of a single species of wild bird or mammal, and, having observed, try to understand.’ And again: ‘Do not think me fantastic if I say that, even in birds, I believe that the fine emotions and most comfortable happiness are, as in man, associated with that form of monogamy in which male and female bear approximately equal parts.’ Are we lightly to kill beings having ‘fine emotions’ and enjoying ‘comfortable happiness?’

† In which I may compare myself to some Maori or other South Sea Island chief, who having been once a cannibal, now feels his gorge rise at it.

mankind, by degrees, will advance along it. Whether much more of the estate on which it lies will be left, in the not so far future, than of that one of Jarndyce and Jarndyce, which all went in costs, thus bringing the case to an end* is another matter, and a question to be asked. But, however, this estate is a larger one, and there is some hope, perhaps, that posterity, for whom it should, indeed, be held in trust, may come into some permanent fraction of it, sufficient to give future observers (how great and great-achieving who can say?) material to continue to work upon. Let us hope so, for when a species goes, all that potential expansion of our knowledge, both of it and through it, which otherwise it holds for all time, goes with itself, and is no more. This, in so far as preventable, should certainly be prevented, even if we take no more ethical view of the matter. We should think it sufficient to have lost what we could not keep. The world of life, before man lived in it, is all gone. We know the bones of some of those old species, but can only conjecture, except in broad generalities, how they looked and how they lived. We do not, as Darwin somewhere says, know a single one of all their instincts. I have often thought of this whilst watching some odd actions of birds, and so, perhaps, will the bird watcher of 2,000 and odd, as he ruefully gazes at Gould's 'great collection' of extinct stuffed Birds of Paradise (if not dust by then), and says: 'Yes, but where are the notes?'



We quote the following from *Punch*, which is a humorous journal:—
'According to a Nature Journal a new species of snail has been discovered at Fryerning, in Essex. We are glad to learn that it will not attack passers-by unless provoked.'

We are pleased to record that the Crown has confirmed the late Bishop of Lincoln's appointment of the Rev. E. Adrian Woodruffe-Peacock to the Rectory of Grayingham, two miles south of Kirton-in-Lindsey, N. Lincs. The future Rector of Grayingham is not unknown to our subscribers, as our present impression shows, for he began writing for *The Naturalist* in 1884, and we have no reason to believe that he is likely to discontinue his contributions.

The death is announced of Samuel Jefferson, familiarly known as Professor 'Jeff,' at Harrogate, in his eightieth year. He was a native of Leeds and was formerly a familiar figure at the Meetings of the Yorkshire Naturalists' Union. He was a Fellow of the Royal Astronomical Society, an honorary member of the Liverpool Naturalists' Field Club, of the Liverpool Astronomical Society, and of the Harrogate Literary Club, and was at one time President of the Leeds Naturalists' Club. He was well known as a popular lecturer and a great educationalist, being at one time secretary to the Yorkshire Board of Education. He was an author of some repute, among his books being 'Sonnets on Nature and Science.'

* See 'Bleak House,' Ch. 65.

YORKSHIRE NATURALISTS AT SPURN.

NOTWITHSTANDING every possible effort having been made to secure accommodation for the members of the Yorkshire Naturalists' Union at Withernsea, Patrington, Easington, Kilnsea, and other places in the area, the extraordinary rush to the seaside on August Bank Holiday week-end resulted in absolutely no rooms being available; where promises had been given, these were subsequently cancelled. In addition to this, the difficulties of train service made an excursion to Spurn appear practically impossible.

However, it was felt that the Meeting should be held, and the usual programme was published, though it was fairly obviously indicated that the prospects were not tempting. Notwithstanding, about two dozen members took part in what proved to be an exceptionally pleasant and profitable ramble.

Some arrived by train, some had cycles or motor cycles, some walked, some slept in tents, and a very few, not to be daunted by threats, arrived at Patrington and managed to find beds somehow, somewhere.

The party was successful in securing headquarters at the Hildyard Arms Hotel, Patrington, after which the usual meeting was held, under the Chairmanship of Mr. T. Sheppard, M.Sc., when it was found that there were representatives of twelve societies present, and reports were given on the day's work by Messrs. Stather, Stainforth, Porter, Robinson, Greevz Fysher, and others.

A few of the members spent a successful week-end in the District and were joined by the party leaving Patrington on Monday morning in wagonettes, who drove as far as Kilnsea, walked along to Spurn, back again along the coast to Dimlington, returning by the road to Easington, and thence to Patrington in wagonettes.

Naturalists, in common with everybody else, had been prevented from visiting this area for some years, on account of the war, and naturally keen interest was taken in many of the extraordinary changes which have taken place in this quiet corner of our county. As we approached Easington, on the sky line were observed the two huge towers supporting the enormous range finders, which formed quite a feature in the landscape. Near these were the large 9.2 guns, and quite a little village of new houses and huts. Looking towards the Humber one saw the enormous piles forming a barrier stretching almost all the way across the Estuary, which had evidently been put there to prevent enemy submarines entering the river. In the centre of the Estuary was a huge Island Fort which had sprung into existence since our last visit, and the Spurn Point itself was connected with the mainland by a railway, which the members were able to use, though station buildings, ticket collectors, and even tickets and fares, were dispensed with.

In view of the extraordinary changes which had taken place in this otherwise quiet district, the naturalists feared that the flora and fauna might have suffered, but it was pleasing to find this was not the case. Walking along narrow sand-dunes forming the Spurn, the prevalence, in apparently increasing quantities, of the beautiful Sea-Holly was especially pleasing, and notwithstanding the traffic and the innumerable soldiers in the area during the past few years, bird life seemed to be quite in evidence, and though the breeding quarters of the Ringed Plover and Lesser Tern had shifted somewhat, the birds were still there and all fears of the extermination of the interesting colony therefore disappear.

The geologists were under the leadership of Messrs. Stather and Sheppard, and in addition to exploring the northern beach of the Spurn peninsula, examined the cliff as far as Dimlington. They were pleased to report that in addition to certain works necessary in connexion with military operations, a large area had been protected by an excellent series of groynes which had been erected during the war. This has

unquestionably done much toward the protection of a fragile fragment of our coast-line, though to the north of these groynes it was evident that erosion was taking place with its characteristic persistence.

The members had the pleasure of seeing once again innumerable erratics from the Lake District, Scotland and Scandinavia, and the younger members of the party were pleased to gather fossils from the various strata of the Yorkshire Coast between Whitby and Bridlington.

Mr. Stather pointed out certain discrepancies between the descriptions of the various glacial beds exposed in South East Yorkshire, as given by different early writers, and pointed out the necessity for a thorough revision of the glacial series of Holderness.

While in the neighbourhood the members had an opportunity of investigating details of the borings for water which had been made during the war, and from which it was apparent that the rumours which had been prevalent that beds of flint had been met with in these borings, were unfounded. It was also clear that some confusion had arisen with regard to the exact localities of the different wells which had been sunk. These points, however, were cleared up by careful enquiry made on the spot.—T.S.

GEOLOGY.—Mr. J. W. Stather writes :—The Spurn peninsula seems stronger and more stable, the sand and shingle being banked up on the sea-side the whole length—probably due to the groynes and sea defences made by the military. The sand dunes, held together by the broad-leaved marram grass, are now well above the level of ordinary tides. The same applies to the river side of the peninsula, as carts can now get along on firm sand from the Warren right up to the lighthouse. If this thin sandbank could be permanently strengthened and the beach stuff hindered from going south the great shallow bay between the Spurn and Sunk Island would form a very favourable area for warping operations on a large scale—with no fear of the sea getting in from the east. If the beach is stopped travelling the growth of the Spurn head southwards will be checked.

When at Spurn we heard rumours of bores being put down through the sands, etc., to the chalk in search of water, and we wait the publication of the details with much interest. We fear from the experience in Holderness generally that the finding of good water in large quantities is very unlikely.

Another effect of the heaping up of the Spurn sandbank is that the large boulders, in thousands, which used to be visible on the beach between Kilnsea and Easington are now invisible, being buried in sand.

After five years' interval the Dimlington sections appeal to the glacialist very strongly. Here, if anywhere in Yorkshire, is the key to the succession of the drift beds. Each division is distinct, in colour, position and contents, from its neighbour. If one has not studied the Dimlington Cliffs, he has much to learn about Yorkshire Boulder Clays—and their differences. These sections are beyond compare the clearest and best in Yorkshire.

In cycling round Sunk Island and looking at the semi-circle of low hills, taking in Paull, Boreas Hill, Burstwick, Keyingham and Patrington, one was impressed with the fact that they all told the same story, viz., that they represented some glacial or very early post-glacial deposits, modified and rearranged by the Humber of that period.

BIRDS.—Mr. E. W. Wade writes :—The time of year is not favourable for bird observation, the breeding birds having reared their young and departed from the nurseries, whilst the migrants, for which Spurn is so famous, have only just commenced to arrive. The birds in song were Titlark, Corn Bunting, Yellow Hammer, Grey Linnet. The three last-named are still breeding. A flock of ten Lesser Tern flew over, and one pair, distinguishable by their cries of alarm, were still frequenting the shingle beach at Kilnsea Beacon. A Kestrel which flew over was re-

peatedly mobbed by them, and after an hour's watching they flew over with sand eels and settled in the shingle. Walking to the spot we found a solitary young one about a week old crouching on the sand. Many Ringed Plover were feeding close by with full-grown young, and were joined by a flock of Dunlin.

Eight Oyster Catchers flew down the coast and a solitary Whimbrel followed by five more came in from the sea flying towards the Humber. On the Humber mud-flats we observed Curlew, Blackheaded, Lesser Black-backed and Herring Gull, and Kittiwakes on the cultivated fields.

Numbers of Skylarks, Titlarks and Grey Linnets were feeding on the saltmarshes and an occasional Whitethroat was seen in the hedges.

LEPIDOPTERA.—Mr. J. Porter writes :—The following is the very meagre list of things I saw at Spurn :—Imagines, two Whites, *Pieris brassica* ; *P. rapae* ; Tortoise shell, *Vanessa urticae* ; Meadow brown, *Satyrus janira* ; Yellow shell, *Camptogramma bilineata* ; Ribbon wave, *Acidalia aversata*, and on the buildings at Easington, *Bryophila perla*.

Larva, Common blue, *Lycaena alexis*, *Heliothis marginatus*, and three or four undetermined species.

DIPTERA.—Mr. C. A. Cheetham writes :—The Diptera seen were chiefly sand-dune species, and are additions to the county lists. The high winds and lack of bright sunshine possibly account for the absence of syrphids, etc.

One of the first captures, afterwards seen in plenty, was a fine robber fly, *Philonicus albiceps* Mg., ♀ and ♂ in fairly even quantity ; this was found on the sand in places sheltered from the wind. With it were two species of *Thereva*—*T. annulata* F., a pretty silvery-white insect, no females were seen of this, and *T. bipunctata* Mg. ; three ♀'s with the very distinctive frons calli and four ♂'s which would have been difficult to identify in the absence of the females. The handsome bee-like *Anthrax paniscus* Rossi was also fairly common, the ♂'s being most numerous.

Another frequent fly here was the large golden faced blue bottle, *Cynomyia mortuorum* L. (this generally breeds in putrid carcasses of dogs, etc.), it was very variable in colour and size, and the males most numerous. Mr. A. R. Sanderson and I have each taken an odd specimen at Austwick previously.

About the brackish ditches a little Stratiomyid, *Nemotelus uliginosus* L. could be had by sweeping the sides, the difference between the sexes in colouration is very striking, the males being in excess. A Dolichopod, *Scellus notatus* Fabr. was also taken on the sandhills. I had previously had this at Bubwith in June this year. The foregoing are here recorded for the first time.

Besides these some few others await further examination. Although no Anopheles were seen *Culex pipiens* L. was too plentiful in the evenings. We were assured that the Clegs were abundant on the dunes but the only ones seen were captured by one of the farm lads on the cattle ; these were not the common species, but *Haematopota crassicornis* Wahl.

From these results of two windy days it is evident that one or two visits at different seasons with hot sunshine would result in many more additions to the lists.

CONCHOLOGY.—Mr. Greevy Fysher writes :—This excursion was on the whole favoured with such fine dry weather that the terrestrial mollusca were not much on the move, and none but the dominant and commoner kind were observed, such as the black and grey slugs, and a couple of species of snail, *Helix virgata* which is not easily discouraged even by bright sunshine, and an occasional *Helix nemoralis*.

On the Humber shore a dead and battered example of *Mya truncata* (both valves hinged together) was obtained.

The shells of the oyster, cockle, and mussel were abundant, and *Tellina balthica*, *Littorina littorea*, *L. rudis* and a large population of

Rissoïdæ were living on the mud and under stones—some of which bore an unpleasant coating of black oil.

BOTANY.—Messrs. Cheetham and Burrell report that Spurn being an unfamiliar district to them they were unable from personal knowledge to compare present with pre-war states of vegetation. Sea protection and military works had caused local disturbances and considerable areas had been lightly burnt, perhaps by cinders from the locomotive that now travels daily between Kilnsea and the Point. In addition to the plants named in Circular No. 281, the following were noted on dunes and mud flats south of Kilnsea village:—*Anthriscus vulgaris* Bernh., *Valeriana sambucifolia* Mikan., *Dipsacus sylvestris* Huds., *Erigeron acre* L., *Filago germanica* L., *Cichorium Intybus* L., *Helminthia echinoides* Gaert., *Thrinicia hirta* Roth., *Plantago maritima* L., *Salicornia ramosissima* Woods, *Juncus Gerardi* Lois., *Carex arenaria* L., *Glyceria maritima* Wahlb., *Lepturus filiformis* Trin. White-flowered Musk Thistle and numerous large mats of white flowered Stork's Bill were seen; Claytonia, although abundant, was at first overlooked on account of its being cropped, presumably by rabbits, of which, however, very few were visible; no uninjured plants were detected, but the tufts of pink leaf stalks with here and there new growth showing became conspicuous when once recognized. A blue flowered Delphinium and a large capsuled Poppy on Kilnsea Warren were possibly escapes from the garden of a ruined bungalow near by.

The comparatively few wayside flowers met with whilst travelling by road half way across the country accentuated the wealth of bloom that delighted the eye on the few miles of sand dune at Spurn; big clumps of Musk Thistle occupied disturbed ground; Ragwort, Wild Celery, Carrot, Sea Rocket and Sea Holly gave masses of colour, the beauty of which was enhanced by contrast with the yellow sands and the foliage of Sea Wormwood, Sea Buckthorn and dune grasses.

Mosses bulked largely in the dune flora but were few in species, viz.:—*Ceratodon purpureus* Brid., *Fissidens taxifolius* Hedw., *Tortula ambigua* Angstr., *T. ruraliformis* Dixon, *Funaria hygrometrica* Sibth., *Webera nutans* Hedw., *Bryum capillare* L., *Brachythecium albicans* B. and S., *B. purum* Dixon, *Hypnum cupressiforme* L., *H. aduncum* Hedw., *Hylocomium triquetrum* B. and S., *Aneura multifida* L., *Lophocolea bidentata* L.

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YORKSHIRE NATURALISTS' UNION. BOTANICAL SECTION.

THE Annual Meeting of this section was held on October 11th, in the University, Leeds, by the kind invitation of Professor Priestley.

The influence of the abnormal weather of the year on various flowering plants provided matter for an exchange of views which are incorporated in the Annual Report, this was adopted and officers were suggested for election at the Annual Meeting of the Union in December.

Dr. F. Arnold Lees, whom the members were pleased to welcome, read an exceedingly suggestive and interesting paper on the subject of *Gentiana verna* in the Cleveland district.

Mr. W. H. Pearsall, M.Sc., gave an account of aquatic vegetation in the Lake district, his remarks being illustrated by a series of maps based on his own investigations. He showed how the underwater plant distribution is affected by surface currents due to prevalent winds and also by the shore line contours.

At the close of the meeting he also exhibited herbarium sheets of the plants dealt with.—C. A. C.

THE DISTRIBUTION OF *GENTIANA VERNA*.

F. ARNOLD LEES, M.R.C.S.

ON September 11th, in the 'Out of Doors' column of the *Yorkshire Observer*, what was styled a 'secret,' viz., the occurrence of the Spring Gentian (*G. verna*) 'in one spot, unrecorded in the books' in Cleveland, among the hills behind Robin Hood's Bay, was made public. I have not seen it myself, and had only a 'rumour' passed on to me some little time back under a bar not to publish it, and I do not in the least know the actual author of the discovery. Yet this, if *bona-fide*, is of the utmost interest to those who study natural botanic chronology. Next Spring the ground upon Fylingdales moor, and all about the stony howes there in the vicinity of Lilhowe Cross should be investigated, and the florula carefully noted, together with details of the calcareous or arenaceous or combined character of the surface soil. When I first heard the rumour I let it lie in my mind as a probable or possible reliquarial persisting; but on surveying the facts of its assurgence of old time, and more recently, in West Ireland and Teesdale—Westmorland, I can scarcely believe it to be quite that—a survivor from Eld—much more likely a natural modern-day originating, similar in a sense to the appearing, assurgent spread of *Arenaria ciliata* in 1892 or 1893? above Selside and Ribbleshead lime-cart trackways; or to *Polygala amara* in Mid-Wharfe and the adjacent launds of Upper Airedale at a later date.

The District all around Lilhowe Cross is a high denuded moorland, ling clad in patches, but with alpine turf in others: it has produced many montane rarities, ranging from *Cornus suecica* (in several other spots besides the classic Hole of Horcum) to *Carex pauciflora*—this last thought to have long 'miffed out' until Mr. Burnley, of Scarborough, ascertained it to be still there this year. Fylingdales high moor all has Lower Oolite, a sandy calcareous stone for its strata base; though the lithologic constitution of the soil does not greatly matter—it does not inhibit the growth of the Spring Gentian upon it. Wind-blown semina doubtless would germinate if the other circumstances (ecologic) of such a supposed windfall were favourable, far-fetched as such a supposition may seem. Another is even wilder: that the seeds could have been transported by the Ice-cap that in a Glacial Period travelled east from west, dropping and catching as it melted away, all sorts and conditions of debris besides those travelled boulders that we hold as evidence of that æonic Stone-Age apotheosis—before Man, and I daresay some will say before any green Gentian.

This raises another enquiry: Is the vernal Gentian in Yorkshire an ancient species at all? I fancy not, and that its chron-history was sequent on its 'head-centre' in West Ireland, and only antedated the *Arenaria* or the *Polygala* I have referred to by a century or so. It was known on the low-lying tabular limestones of Mid-west Ireland long ago, having been first published in 1650 in How's *Phytologia*. In Teesdale it was recorded in 1797; and judging by its downspread (where conditions allowed) and the status assigned to it in consequence by Gilbert Baker, in 1863, and the older James Backhouse, from the higher north and eastern facing sugar-limestone lynchings of Mickel Fell—my own observations were only from 1870 to 1885—it is that of a comparatively Recent-age Natural-colonist, at the beginning or in the earlier years of its 'cycle' of assurgence. All species must have a beginning, a jumping-off stage, though we cannot fix it to a generation or a decade. However natural, or 'accidental' (let us say) in a particular place, if the ground, climate, drainage conditions, etc., are ready for them, set down somehow, they follow a certain course: ripple-like they enlarge their area, whereas Man-introduced species mostly tend to die out, or at least remain where put down.

Violent winds, Atlantic gales, will carry small seeds, as well as spores of ferns, hundreds of miles : it has been proved. The parachute of a dandelion deposited in a lull on an alpine boggy slack like Widdy-bank fell or the Cronkley plateau, germinates, and by slow degrees, protecting itself phyllarically, and in a lustrum or two dots the wet bog with *Taraxacum palustre* D.C. or *T. udum* Jord., distinct phytal evolutions. The feather-arrow of a montane willow-herb, blown from its lowland hearth will show under the stable high-level conditions of matrix and climate as *Epilobium collinum* or *montanum-palustre*, modifying, or mutating after the manner of an Evening-Primrose. And in Baker's day *Gentiana verna* had occurred as low down as a pasture by the Tees near Darlington.

And there is another consideration : plants (of the humbler sort certainly) have their natural and yet inevitable comings sequent upon other things besides cataclysms of nature, landslips, such as afforestations of bare land, or roydings of sylvanic areas. *Festuca sylvatica* has too frequently to be coincidental followed plantings of trees in our civic water-supply areas. So has *Goodyera repens* the planting of fir (the sapling soil bringing or gradually elaborating the needful fungoid bio-genetic adjunct for its growth. So is *Hypericum dubium* sequent on understood disturbances or interferences of surface soil. So is *Pyrola minor* associated, after a lapse of a few years, with larch plantationing. So, near Leeds, has been the increasing colonies of Linton's Helleborine (*Epipactis atro-viridis*) through the heyng of cemetery areas, of parks and mansion grounds, with beech trees.

But these are after all only new instances of what collation of dates of discovery with dates of afforestings have told us before, only the earlier modern botanists like Sir J. E. Smith did not 'tumble' to it : *Orobanchis niger*, *Ornithogalum verticillatum*, *Cynoglossum montanum*, perhaps *Pulmonaria officinalis* in Suffolk, *Stachys germanica*, certainly *Omphalodes verna* and *Lycopodium annotinum* at Buttercrambe 'wood,' near York, are all sequents upon forestal reinforcements of prior dates. Of York's novelties the only exception is the Thistle-rape (*Orobanchis reticulata*) of the Permian limestone ; and that possibly was known earlier under another name.

The facts are not yet available for decision as to what rank (and why) we must assign *Gentiana verna* in Cleveland : it is a serendipity, anyhow, and I, for one, welcome it as a new integer for vice-county 62. It is difficult of access, hard to grow in alp-gardens, and if truly the happy accident I have dubbed it, is no more likely to be reived of the plant-hunter than a *Cornus* or a *Trientalis*.

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Part 5 of Witherby's Hand-book of British Birds (pp. 273-336, 4s. net.), deals with the species from the Masked Shrike to the great Reed-Warbler. There is a fine coloured plate, half natural size, of Chiffchaffs and Warblers, from a drawing by Gronvold, and other plates and illustrations.

The Botanical Society and Exchange Club Report for 1918, edited by G. Claridge Druce (Vol. V., part 3, pp. 267-480, 7s. 6d.) and the report for 1918 of the *Botanical Society Exchange Club*, by W. C. Barton (Vol. V., part 4, pp. 483-535, 3s. 6d.) are to hand. The former contains particulars of 'Plants mostly new to the British Isles,' various obituaries, and notes of 'New county and other records,' with the following two Supplements : Monograph of the British Batrachians, by W. H. Pearsall, and Additions to the Berkshire Flora, by G. C. Druce. Mr. Barton's report refers to 5340 sheets covering 453 gatherings sent in by 33 contributors. Critical remarks on the various species are offered. There is some little confusion with regard to the similiarity of the titles of these two publications, but bibliographers will be assisted by the parts and numbers of the volumes.

PLANT GALLS FROM THE SCARBOROUGH DISTRICT.

WM. FALCONER.
Slaithwaite, Huddersfield.

THE following galls (fifty-two in number) were incidentally met with during the second week in September, and their localisation is in general therefore indicative neither of their frequency nor their distribution in the district.

HYMENOPTERA.

The first four on willows and the next five on oaks—

- Pontania proxima* Lep. On long-leaved willows, Peasholme, Scalby and cliffs south of the town. On *S. Caprea*, Hayburn Wyke.
P. pedunculi Htg. On *S. Caprea*, Falcon Inn, plentiful.
Cryptocampus venustus Zadd. As the last.
C. ater Jur. As the last, but fewer.
Neuroterus albipes Schr. f. *laeviusculus* Schr.
N. baccarum Linn. f. *lenticularis* Oliv.
N. vesicator Schl. f. *numismatis* Oliv.

These three at Cayton Bay, Staintondale, Hayburn Wyke, but the first much less plentiful than the other two. On one leaf were counted no less than 140 of the last named.

- Dryophanta taschenbergi* Schl. f. *folii* Linn. Raincliff Woods.
Andricus marginalis Adler. Hayburn Wyke, one example past maturity.
Rhodites rosae Linn. On *Rosa mollis*, by the roadside at Ravenscar, one bush, on leaves and stems.

DIPTERA.

- Perrisia marginem-torquens* Winn. On long-leaved willows, everywhere
P. ? Sp. On long-leaved willows, like *P. terminalis* H. Löw, but larvæ yellow; Peasholme and Staintondale.
Rhabdophaga nervorum Kief. On *S. Caprea*, Falcon Inn. On *S. cinerea*, Ravenscar; infrequent.
Oligolophus capreae Winn. On *S. Caprea*, Falcon Inn; plentiful. On *S. cinerea*, Ravenscar.
Contarinia betulina Kief. On birch, Ravenscar.
Mikiola fagi Htg. On beech, Hayburn Wyke.
Perrisia urticae Perr. On nettles, general.
Contarinia steini Karsch. On pink campion, cliffs south of Holbeck Gardens.
Perrisia ulmariae Bremi. On meadow sweet, Cayton Bay.
P. engstfeldii Rübs. As the last.
P. rosarum Hardy. On wild rose, south of Holbeck Gardens.
P. crataegi Winn. On hawthorn, general and abundant.
Contarinia loti de Geer. On birdsfoot trefoil, cliffs south of Holbeck Gardens.
Perrisia viciae Kief. On *Vicia sepium*, Scalby, on the railway side.
P. fraxini Kief. On ash, near the cavalry barracks and Staintondale.
P. veronicae Vallot. On Germander speedwell, cliffs south of Holbeck Gardens.
P. ? Sp. Massed terminal leaves, purple at the base, as the last, on *Galium verum*, similar to that found at Bridlington (*The Naturalist*, December, 1918, p. 384).
Trypeta reticulata Sch. On *Hieracium boreale*, Ravenscar.
Urophora solstitialis Linn. On *Centaurea nigra*, south of Scarborough.
Stictodiplosis hypochaeridis Rübs. On *Hypochaeris radicata* Linn., the cliffs south of Holbeck Gardens.
Phorbia seneciella Meade. On ragwort, Cayton Bay.

HOMOPTERA.

- Chermes abietis* Kalt. On spruce, Hayburn Wyke.
Pemphigus affinis Kalt. On black poplar, cliffs south of Holbeck Gardens.
Schizoneura ulmi Linn. On elm, Cayton Bay.
Myzus ribis Linn. On gooseberry, in a garden at Staintondale.
Rhopalosiphum ribis Linn. On black currant, in a garden at Cloughton.
Aphis padi Linn. On blackthorn, general and abundant.
A. sorbi Kalt. On mountain ash, Staintondale.
Psyllopsis fraxini Linn. On ash, Scarborough and Staintondale.

ACARI.

- Eriophyes salicis* Nal. On *S. Caprea*, Falcon Inn, Ravenscar and Hayburn Wyke.
E. nalepai Fckn. On alder, general and plentiful.
E. brevitarsus Fckn. On alder, Cayton Bay.
E. avellanae Nal. On hazel, Raincliff, enlarged buds.
E. ribis Nal. On black currant, Cloughton.
E. similis Nal. On blackthorn, on the cliffs by the cavalry barracks.
E. crataegi Can. On hawthorn, one bush, near Scalby.
Phyllocoptes acericola Nal. On sycamore, Staintondale.

FUNGI.

- Exoascus alnitorquus* Winter. On alder, blisters on the leaves and deformation of cones, Cayton Bay.
Taphrina aurea Fries. On black poplar, cliffs south of Holbeck Gardens, and Ravenscar.
Fungus ? Sp. On *Poterium sanguisorba* Linn ; yellow spore clusters and swollen stems, petioles and midrib, cliffs south of Holbeck Gardens.

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Popular Oil Geology by Victor Ziegler. New York: J. Wiley and Sons. London: Chapman and Hall, 149 pp., 11/6. This little volume with its stout covers and rounded corners is evidently intended to be carried about in the pocket. It is by the Professor of Geology and Mineralogy at the Colorado School of Mines, and deals with the important oil industry of North America. 'It is not intended to be a general treatise on the subject of oil and gas geology, nor is it intended for the experienced oil geologist. It is written for the man without technical or scientific training in this branch of geology.' It is well illustrated by a remarkable series of diagrams, maps, etc., the view of 'Spindle Top Field, Beaumont, Texas,' being truly American. The price seems rather high for so small a book, although it is well 'got up.'

Shropshire: The Geography of the County. By W. W. Watts. Shrewsbury: Wilding & Son, 254 pp., price 3/6. We thought the style of this little book seemed familiar, and find from the Preface that it was originally written for one of the Cambridge County Geographies, but as it was written a little more fully and had rather more illustrations than usual in that series, it was considered advisable to print it independently rather than, presumably, undergo the disagreeable process of pruning. Personally we think the Cambridge people were ill advised in not including this excellent volume in their series, especially when at least three of the series—Cambridgeshire, East London and West London respectively, seem quite as voluminous and as well illustrated. However, Professor Watts' reputation is such that doubtless he and the publishers will benefit; those who use the Geography will certainly have an advantage, and a future Cambridge volume dealing with Shropshire will be a difficulty.

ADDITIONAL YORKSHIRE DIPTERA.

CHRIS. A. CHEETHAM.

Corynoneura minuta Winn. This very minute species occurred in numbers on the under sides of the wall stones near waterfalls on Austwick Beck (21-4-19).

Ptychoptera lacustris Mg. In fair numbers and both sexes near Austwick Moss (21-6-19).

Molophilus ater Mg. A curious species with very small wings and legs well developed, evidently adapted for running rather than flying. Curtis gives some interesting notes on it (Pl. 444, *Brit. Ento.*). It was taken on Fleet Moss, Oughtershaw at above 1800 feet elevation (8-6-19).

Tipula pagana Mg. Frequent at Austwick (20-9-19) the females are practically wingless.

Oxycera pygmæa Fln. 2 ♀s, Austwick (12-7-19).

O. morrisii Curt. 2 ♀s, Austwick (21-6-19).

Odontomyia viridula F. 1 ♀, Bubwith (25-6-19).

Chrysops cæcutiens L. 1 ♂, several ♀s, Austwick Moss, June, 1919.

Acrocera globulus Pz. A single specimen taken at Lawkland Moss (13-7-19). A very curious insect looking almost like a spider; more strangely still, it is parasitic on spiders. Wingate has made an error in his key to this genus: his *Oncodes* and *Acrocera* should be transposed.

* *Tachypeza nubila* Mg. On tree trunks, Bubwith† (25-6-19); Draughton (19-7-19). This species runs swiftly to the opposite side of the tree trunk from the collector, but does not attempt to fly.

Pæcilobothrus nobilitatus L. The males of this beautiful species were fairly frequent at Bubwith (25-6-19).

Diaphorus oculatus Fln. Austwick and Lawkland Mosses, (July and August, 1919).

Porphyrops crassipes Mg. With the last-named.

Scellus nectatus F. Bubwith (25-6-19).

Callimys amæna Mg. A small and beautiful fly, 1 ♀, Bubwith (25-6-19).

Pipunculus campestris Ltr. Austwick, Farnley, etc., July and August, 1919.

Paragus tibialis Fln. 2 ♀s, Lawkland Moss (28-6-19).

Chrysogaster hirtella Lw. Frequent in June, 1919, at Austwick.

* These species are recorded for the county in the unpublished lists of the Bradford Naturalists' Society.

† Dr. Fordham informs me that the wood where I took all cited as Bubwith, except *Odontomyia* and *Helophilus*, is at Melbourne near Bubwith.

Melanostoma dubium Ztt. Mr. Jas. E. Collin* says that a syrphid taken in numbers on Cloudberry flowers on Pennyghent, June 9th, 1919, must belong to this species, but there is some doubt as to whether so-called *M. dubium* is a good species and I have, at his request, forwarded the whole series taken on this occasion for his further examination, as he thinks they may help to make the matter clearer.

Syrphus torvus O.S. Mr. P. H. Grimshaw has kindly confirmed this and the following *Syrphus* sp., for me, 1 ♀ taken at Farnley (16-10-19).

S. vittiger Ztt. A fair number of ♀s at Austwick Moss (24-5-19).

**S. umbellatarum* F.

S. labiatarum Verr.

These two and the closely related *S. compositarum* Verr. were taken together at Nidd (7-9-19) and Adel (28-8-19).

Can they be members of one variable species?

Eristalis rupium F. Austwick Moss and Ling Ghyll, June, 1919.

Helophilus transfugus L. 1 ♀, Gormire (7-8-19).

H. lineatus F. 1 ♀, Austwick Moss (1-6-19), 1 ♂, Bubwith (25-6-19), 2 ♂, Gormire (7-8-19).

Xylota sylvarum L. A ♀ of this fine species taken at Gormire (7-8-19).

Phorbia cepetorum Meade. From pupæ collected by J. A. Fisher at Skipton. This is the Onion fly.

Tetanocera umbrarum L. Austwick Moss (12-6-19 and 14-7-19).

Elgiva dorsalis F. Farnley (July), Adel (August, 1919).

Sepedon spegeus F. Fairly frequent around one shallow pond at Pilmoor (8-8-19).

Ceroxys crassipennis F. 2 ♀s, Bubwith (25-6-9).

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Lord Bolton has presented a collection of South American shells to the York Museum.

The suggested excursions for the Yorkshire Naturalists' Union in 1920 are:—Skipton, Easter; Richmond, Whitsuntide; Martin Beck near Bawtry, June; Kirkham Abbey, July; and Beverley, August.

The Geological Society of London has issued Nos. 1027-1042 of its Abstracts of Proceedings (1918-1919, 112 pp., 6/-). Included are summaries of several papers bearing upon the geology of the northern counties.

We regret to record the death of Alfred White, principal of the firm of F. Lawrence & Co., Taxidermists, Leeds, in his 65th year. He was a native of Boston and at one time attended the meetings of the Yorkshire Naturalists' Union and the Leeds Naturalists' Society. A Fellow of the Zoological Society, he took a keen interest in the natural history of the neighbourhood, and he introduced a number of wild fowl on the ornamental waters of Roundhay Park.

FUNGUS FORAY AT HELMSLEY (1919).

A. E. PECK,
Scarborough.

THE Two Hundred and Eighty-second Meeting of the Yorkshire Naturalists' Union was held October 4-9, at Helmsley, for a further investigation of the Fungus Flora of the district, notwithstanding the interference of the railway strike.

Mr. Greevz Fysher and Mr. R. Fowler Jones cycled from Leeds and York respectively. Mrs. Fysher made the journey by motor car. The writer, with his wife, motored from Scarborough. Mr. Ackroyd from Batley had reached Malton by train on Saturday evening and arrived on foot at Helmsley Headquarters (Black Swan Hotel) in time for Sunday morning breakfast.

The strike ceased on the Sunday night and Mr. Malone, arriving from Bradford by train on Tuesday afternoon, completed the party.

The meeting had purposely been fixed for a date later in the year than usual, in the hope that there might be moister conditions. This hope, however, remained unrealised.

One could not avoid contrasting the present visit to Helmsley with that of 1903, so ably recorded by the late Charles Crossland in *The Naturalist* for November, 1903, No. 562, pages 425-436.

Therein he describes the ground of these charming woodlands as 'moist, just the right kind of place for our purpose,' whilst upon the present occasion this same ground was described by someone as 'dry as snuff.' The 'shady' sides of these dales, however, hold much more moisture than those which are more exposed to the sun, and to the former, therefore, chief attention was directed, with more gratifying results.

On the first outing *Tricholoma leucocephalum* with its strong odour of 'new meal,' was found in a pasture to the right of the road to Rievaulx, and troops of *Hebeloma sinapizans* occurred in an adjoining pasture. *Psalliota campestris* (the common mushroom) here was also found in fair quantity and this species, throughout our visit, agreeably added to the menu.

The Park and plantations near Duncombe Hall proved dry and unproductive except for a few of the Hygrophori. Returning to Helmsley by the river side, however, *Polyporus sulphureus* was growing from a new fence of dressed wood, whilst several clusters of *Pholiota squarrosa* were growing from stumps.

On Monday the party walked to Rievaulx Abbey, but nothing more interesting than *Tricholoma humile* was noted

in the roadside pastures. On the side of the road leading down to Rievaulx village was the beautiful *Otidea aurantia* with *Hypholoma velutinum* in close proximity. The Abbey having been inspected as well as the works of excavation and restoration which are now proceeding, it was decided to return to Helmsley by the vale of the Rye. In the wood great numbers of dried specimens of *Polyporus dryadeus* (being previous years' growths) were observed on living oaks. The beef-steak fungus, *Fistulina hepatica*, was here gathered from the same host. Descending to the flat meadows, *Tricholoma personatum* was gathered for the pot along with more *P. campestris*. A showy cluster of *Pholiota adiposa* grew on a riverside stump.

Exceptionally near views of a heron, several dippers and a herd of deer added to the interest and pleasure of this day's excursion.

On Tuesday the Terrace of Rievaulx was visited in the strong hope that *Entoloma farrahi* Masee and Crossland, here originally discovered by John Farrah and party in 1903 and named in his honour, might again be recorded. Interest deepened when a lady presented for inspection an agaric with deep blue cap and stem undoubtedly of the genus *Entoloma*. More specimens were brought to hand and some little excitement was manifest as to what microscopic examination of the spores would reveal, the form of the latter being the deciding factor. Alas, they proved to be globose (scarcely angular and certainly not nodulose), whereas smooth *elliptical* spores are the chief characteristic of *E. farrahi*. We had to be content with recording *Entoloma bloxami*, a very handsome species but without the local association possessed by *E. farrahi*. Also on the Terrace were noted *Entoloma ameides* and *Hebeloma crustuliniformis*, the latter with the odour of radishes common in the genus, whilst on a stump near was *Polyporus elegans* with tube stratum scarcely thicker than blotting paper.

A short visit to Ryedale above Rievaulx led to the discovery of a fine specimen of *Polyporus squamosus* 18 inches in diameter, *Lactarius torminosus* with its parasitic fungus *Hypomyces torminosus*, *Tricholoma flavo-brunneum* and the only *Boletus* seen throughout the Foray and this being in too poor condition for positive identification.

The outward and return journeys were made in members' motor cars.

On Wednesday Beckdale was visited and proved to be the best ground yet explored. Large clusters of *Armillaria mellea* grew luxuriantly on and about stumps on the damp level ground, whilst the wooded slopes (chiefly the left hand which held far the more moisture) produced *Tricholoma nudum*, *Hypholoma leucotephrum*, *Bulgaria polymorpha*, *Clitopilus*

orcella, *Leotia lubrica*, *Nolanea pisciodora*, *Psalliota sylvatica*, *Lentzites abietina*, *Mycena polygramma*, *Polyporus dryadeus* (fresh specimens) etc., the whole forming an interesting variety not elsewhere met with this Foray.

This concluded the outings, Thursday being devoted to clearing up and 'clearing out.'

A new feature of the Foray was the visit to the Exhibition Room of the boys of the Earl of Feversham School with their Master, Mr. E. W. Williams.

Here the writer gave a little discourse upon Fungi, illustrating his remarks by reference to specimens on view. This should have been followed by a Lantern Lecture on 'Edible, Poisonous and other Interesting Fungi,' but the necessary supply of Oxygen was held up by the railway conditions. The strike was also responsible for the absence of Dr. Wager and Mr. Cheesman and their promised lectures.

At the 'business' meeting held on Wednesday night, Officers were re-elected, a vote of thanks accorded to Colonel Duncombe for permission to visit the Estates and a recommendation to the Executive Committee that the Mycological Meeting of 1920 should be held at Helmsley was passed.

In the list of records the writer is chiefly responsible for the Agarics, Polypores, etc., whilst Mr. Malone dealt with the Ascomycetes, the Uredinaceae, the Mycetozoa and other species.

Of the total of 179, as compared with 430 in 1903, the following 70 species are new records for the Helmsley district.

BASIDIOMYCETES.	
(Gastromycetes)	
<i>Lycoperdon caelatum</i> .	<i>Leptonia lazulina</i> .
(Hymenomycetes)	<i>Nolanea pisciodora</i> .
<i>Tricholoma flavo-brunneum</i> .	<i>Pholiota erebia</i> .
„ <i>leucocephalum</i> .	„ <i>adiposa</i> .
„ <i>humile</i> .	<i>Inocybe scaber</i> .
<i>Clitocybe fragrans</i> .	<i>Tubaria furfuracea</i> .
<i>Collybia ingrata</i> .	<i>Cortinarius</i> (Ino.) <i>violaceus</i> .
<i>Mycena flavipes</i> .	„ (Derm.) <i>tabularis</i> .
„ <i>excisa</i> .	<i>Hypholoma velutinum</i> .
„ <i>vitis</i> .	„ <i>leucotephrum</i> .
„ <i>colariata</i> .	<i>Psathyra corrugis</i> .
<i>Pleurotus revolutus</i> .	<i>Polyporus elegans</i> .
„ <i>acerosus</i> .	„ <i>sulphureus</i> .
<i>Hygrophorus olivaceo-albus</i> .	<i>Radulum quercinum</i> .
„ <i>fornicatus</i> .	<i>Stereum rugosum</i> .
<i>Lactarius torminosus</i> .	<i>Hymenochaete tabacina</i> .
<i>Russula rubra</i> .	<i>Corticium laeve</i> .
„ <i>fellea</i> .	„ <i>sanguineum</i> .
<i>Lentzites betulina</i> .	<i>Clavaria persimilis</i> .
„ <i>abietina</i> .	<i>Puccinia violae</i> .
<i>Entoloma bloxami</i> .	„ <i>primulae</i> .
„ <i>ameides</i> .	„ <i>hypochoeridis</i> .
„ <i>jubatum</i> .	„ <i>taraxaci</i> .
<i>Clitopilus orcella</i> .	<i>Triphagmium ulmariae</i> (on
	Meadow-sweet).

ASCOMYCETES.

- Hypomyces tominosus* (on *Lactarius tominosus*).
Phyllachora pteridis (on Bracken).
Heptameria acuta.
Phyllactinia suffulta.
Erysiphe graminis.
 „ *galeopsidis* (on Wound-wort).
 „ *cichoracearum* (on Burdock).
Capnodium salicinum (Sooty Mould).
Hysterium pulicare.
Hysterographium fraxini.
Humaria carbonigena.
 (On burnt ground).
Lachnea hirta.
 „ *umbrorum* (on the ground).

Helotium virgultorum.„ *calyculus* (on dead branches).*Belonidium pruinosum*.*Mollisia melaleuca*.

PHYCOMYCETES.

Synchytrium mercurialis.

SPHAEROPSIDALES.

Phoma longissimum.

HYPHOMYCETES.

Monilia fructigena (on an apple from Lasingham).*Penicillium glaucum*.*Stilbum tomentosum* (on *Trichia*).

MYCETOZOA.

Didymium farinaceum var. *minus*.

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***Sympetrum sanguineum* Mull., a Dragonfly new to Yorkshire.**—A week or two ago, Mr. J. Beanland brought me a dragonfly he had not seen before. On comparing with the authorities, we were pleased to find that it was without doubt *Sympetrum sanguineum*, a species hitherto unrecorded for Yorkshire. Mr. Porritt has kindly examined the specimen and confirms our determination. Three specimens were taken at Hawkesworth near Bradford, on August 30th, 1919, by Mr. Morrell.—J. W. CARTER, Bradford.

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***Cypripedium Calceolus*—Earliest Record for England.**—Mr. Arthur Bennett points out to me that the earliest notice for Yorkshire of Ye Ladye's Slipper goes back further than the date—1640, 'In a wood called the Helkes in Lancashire, neere the border of Yorkeshire, given by me in *Flora of West Yorkshire*, to 1629, on p. 348 of Parkinson's earlier herbal 'Paradisi in sole . . . a garden of all sorts of pleasant flowers which our English ayre will permitt to be noursed up'—a very scarce work not available either to me in 1887, nor to Mr. W. A. Clarke in 1896, though it is quoted among the List of books referred to in the 2nd edition, issued by West, Newman & Co. in 1900. The Helk's wood near Ingleton is now accounted to be within Yorkshire's county boundary, but in the 16th and early 17th centuries, like an adjacent part of Westmorland, it was not so, I believe. The relationship of John Dalton (1766-1844) to the Rev. James (1764-1843) still awaits explication; but I fancy they were brothers, John the younger, and the birth dates and the fact that the one sent the other plants seems a strange coincidence, if it was not so.—F. ARNOLD LEES.

THE SPIDERS OF YORKSHIRE.

WM. FALCONER.
Slaithwaite, Huddersfield.

(Continued from page 368).

Gen. *Porrhomma* Sim., 7-11.

Some of the species of *Porrhomma* are very closely allied and British records, before the revision of the genus by comparison with the actual type specimens by Dr. Jackson in 1912,* are not always specifically correct.

P. pygmaeum B.I

Widely distributed in the British Isles and on the Continent, and usually common amongst moss and leaves, and at the roots of herbage in both dry and moist situations; occasionally on railings; not ascending to any great height. Both *P. pallidum* and *P. montanum* Jacks. had previously been referred to this species or to *P. oblongum* Camb.; for this reason I have omitted all stations about which there may be doubt, preferring in these species a shorter rather than an erroneous list of records. *Adults* most months of the year. First occurrence—the author, Drop Clough, June, 1901.

V.C. 61.—Birkhill Wood (Cottingham), Hornsea Mere, New Joint Dock and Humber Bank (Hull), Brantingham Dale, T.S.; Skipwith Common.

V.C. 62.—Middlesbrough, Guisborough Park Wood, sparingly, J.W.H.; Cayton Bay, Raincliff Woods, Langdale End, R.A.T.

V.C. 63.—Rivock (Keighley), R.B.; Shipley, W.P.W.; Scout Wood (Slaithwaite); Drop Clough and Wessenden Valley (Marsden); Askern.

V.C. 64.—Burley-in-Wharfedale, W.P.W.; Roundhay Park (Leeds); Stubbing Moor; Wothersome; Chandler's Whin (York); Picking Gill (Sawley).

P. pallidum Jacks.

Of northern range, Moray (Scotland), Northumberland, Cumberland, Cheshire, Staffordshire; amongst moss and dead leaves in woods. *Adults* most months of the year, reaches an elevation of 2,000 feet. First occurrence—the author, Slaithwaite, June, 1899.

V.C. 62.—Wilton Wood, rare, J.W.H.; Scarborough, R.A.T.

V.C. 63.—Calverley, S.M.; Rivock (Keighley), Shipley, W.P.W.; Deffer Wood (Cawthorn); Coxley Valley; Hebden Bridge: Owl's and Bottoms Woods, Scout Wood, Ainley Place, Barrett Clough, Royal Clough, Cupwith, Dean Head, all near Slaithwaite; Drop Clough, Wessenden Valley, Pule, near Marsden; Chew Valley, Greenfield; Honley Old Wood and Hey Wood; Morton Wood (Holmfirth); Mollicar Woods, Storthes Hall Wood, Smith Wood, Woodsome, Armitage Bridge, Butternab Wood, all near Huddersfield; Harden Clough (Meltham); Askern.

V.C. 64.—Morton Moor and Howden Ghyll (Keighley), Shipley Glen, W.P.W.; Roundhay Park, Meanwood and Adel, near Leeds.

P. montanum Jacks.

Of northern range, Ben Voirlich and Edinburgh, Rothiemurchus, Northumberland, Cumberland, Snaefell (Isle of Man), and Cheshire, reaches an elevation of 3,000 ft. First occurrence—the author, Slaithwaite, June, 1901.

V.C. 62.—Farndale, common, J.W.H.

* 'Trans. Notts. Nat. Soc.' for 1911-12, pp. 30-46 (1913).

V.C. 63.—Bottoms Wood, Slaithwaite; Slaithwaite Moor; Drop Clough; Clowes Moor (Marsden); Standedge; Crimsworth Dene; Hardcastle Crag.

V.C. 64.—Sawley High Moor; Ingleborough.

P. errans Bl.

Other species have been confounded with *P. errans* Bl., and some records, both British and Continental, are not to be relied on; it is certainly known from Bloxworth (Dorset), Hoddesdon (Herts.), Penrith (Cumberland), Ninebanks (Northumberland) and Co. Carlow (Ireland); usually on fences and railings.

V.C. 63.—Bradford, R.H.M. (V.C.H.). Dr. Meade's specimens are true *errans*, but the locality as given is not definite, and they may have come some distance away from the city.

P. microphthalmum Camb.

Previous records not all reliable (see next species), but certainly known from Dorset, Sussex, Kent, Middlesex, Herts, Suffolk, Cambs., Staffs., Cheshire and Northumberland; amongst herbage and beneath stones, occasionally in outhouses. *Adult* summer and autumn. First occurrence—the author, Stubbing Moor, June, 1903. Apparently scarce in Yorkshire.

V.C. 61.—Bridlington, ♀, Humber Bank, near the New Joint Dock, 1♂, Kelsey Hill, 2♀♀, Marfleet Creek, Welwick on Humber Bank, 1♂, 1♀, Leconfield, 1♂, T.S.; Riplingham, 1♀, E.A.P.; Kelsey Hill, 2♀♀, E.B.; Skipwith Common, ♀, Spurn 2♀♀.

V.C. 62.—Eston, J.W.H.; Ringingkeld, 1♀.

V.C. 63.—Calverley, S.M.

V.C. 64.—Harewood Avenue, 1♀, W.P.W.; Stubbing Moor, 1♂; Kettlewell, 1♀, in an outhouse.

P. thorellii Herm.

Previously confused with *P. microphthalmum* Camb., and so recorded; noted for *outdoor localities*, Huddersfield, Hexham, Tynemouth, Seascale, Co. Carlow and Co. Antrim; *caves* in Co. Fermanagh, Lambay Island, Cheddar; *coal-pits* in Co. Durham; *cellars*, Yorkshire and Northumberland. *Adult* summer and autumn. First occurrence—the author, Slaithwaite, July, 1901.

V.C. 63.—Glasshoughton Sewage Works, 2♂s, 9♀♀ from filter walls and clinkers, 4♀♀ from grass, J.W.H.J.; Cellar at Slaithwaite, 2♂s, 9♀♀; Drop Clough, from vegetable debris, several ♀s; sewage works, Berry Brow, numerous ♂s, ♀s; Hardcastle Crag, 1♂, 2♀♀, from beneath stones.

P. egeria Sim.

Rare, recorded from Dorset, Isle of Wight, Somerset, New Forest, Suffolk, Derbyshire, Durham, Northumberland, Leinster and near Edinburgh; in cellars, barns, houses and caves, or in the open under stones or on railings; abroad, France and Hungary. First occurrence—the author, Pole Moor, October, 1902.

V.C. 62.—Raincliff Woods, 1♀, R.A.T.

V.C. 63.—Pole Moor (Scammonden), 1♂, 1♀, beneath stone; Butternab Wood (Huddersfield), 1♀; Drop Clough (Marsden), 4♀♀ from grass surrounding an embedded stone; Ellen Springs, ♀; Dunford Bridge, 1♀.

Gen. *Tmeticus* Menge, 3-3.

T. affinis Bl.

A very rare British spider, recorded for Dorset, Derbyshire, Cambridgeshire, Yarmouth (sub *Anglia hancockii* F. P. Smith), Chester and Hertfordshire; in damp ground or near water. First record—R. H. Meade, Hornsea Mere, 1854, S.G.B.I.

V.C. 61.—Hornsea, R.H.M., ♀ the type specimen; Hornsea Mere, 2♂s, 2♀♀, T.S.

V.C. 63.—Harewood Park, 3♂s, 3♀♀, on borders of mere.

T. graminicola Sund. (*Gongylidium graminicola* Sund.)

Common in the south of England, but scarcer in the north, in Scotland, and in Ireland (Co. Waterford and Co. Wexford); abroad, Sweden, Denmark, Belgium, France, Germany and Siberia; among grass. *Adult* spring to summer. First occurrence—the author, Harewood Avenue, June, 1903.

V.C. 61.—Hornsea, 1♂, and Humber bank between Hull and Hessle, 1♂, T.S.; Hornsea Mere, E.A.P.

V.C. 64.—Harewood Avenue, Linton Common, E. Keswick and by river at Tadcaster, both sexes numerous; Chandler's Whin, York, 1♂, 1♀.

T. dentatus Wid. (*Gongylidium dentatum* Wid.)

Widely distributed in Gt. Britain as far north as Inverness, but not common in Ireland and in many English localities; abroad, in Europe, Africa and Syria. *Adult*, throughout the year. First occurrence—T. Stainforth, Hornsea Mere, April, 1908.

V.C. 61.—Weedley Springs, Marfleet Creek, Kelsey Hill, Swine Woods, Birkhill Wood, Leconfield Moat, Pulfin Bog (Beverley), Market Weighton, Bielsbeck, Hornsea Mere, King's Mill Marsh (Driffeld), brickponds at Hull, Snuff Mill Lane (Hull), Barmby, T.S.; Selby, Riccall and Skipwith Commons, W.P.W., W.F.

V.C. 62.—Carr Naze, Filey, T.S.

V.C. 64.—Harewood Park, both sexes.

Gen. *Macrargus* Dahl., 1-1.

[Gen. *Tmeticus* Menge, ad part.]

M. rufus Wid.

Usually common amongst fallen leaves, at the roots of grass and under stones, but rare in some parts of the British Isles, as in Ireland and the south of England; abroad, Scandinavia, Belgium, N.E. France, Germany and Hungary. *Adult* ♂ autumn to spring; ♀ throughout the year. First occurrence—the author, Slaithwaite September, 1898.

V.C. 61.—S. Cave, Bielsbeck, Houghton Woods, T.S.; Scampston.

V.C. 62.—Eston Nab, G.B.W.; Farndale, Lonsdale, Guisborough, Normanby Intake Plantation, Eston, common, J.W.H.; Egton, W.P.W.; Lindale, J.F.; Raincliff, Oliver's Mount, Scarborough and Ravenscar, R.A.T.

V.C. 63, 64.—A common inhabitant of woods or beneath trees, wherever investigation has been made; occasionally on the moors in the Huddersfield area.

Gen. *Halorates* Hull, 1-1.

[Gen. *Tmeticus* Menge ad part.]

H. reprobus Camb.

Widely dispersed, but local, haunting the coast just above high water mark, noted for about one dozen localities from Dorset to the Orkneys, and in Ireland at Dublin Bay; not usually in quantity, but so on N. Wales coast, 1916. First occurrence—T. Stainforth, Humber Bank West, July, 1908.

V.C. 61.—Humber Bank between Hull and Hessle, 1♂, 3♀, Marfleet Creek, 1♂, 7♀s, Saltend Common and N. Ferriby, T.S.; Hessle, E.A.P.

V.C. 62.—Grangetown, mud flats, J.W.H.; Skinningrove, west of jetty, both sexes, adult and imm. beneath a heap of stones on shore.

Gen. *Phaulothrix* Berth., 2-2.

[Gen. *Tmeticus* Menge ad part.]

P. hardii Bl.

Mainly of northern range, and unknown in the south of England and in Ireland; recorded from several Scottish localities as far

north as Moray Firth, and from Westmorland, Cumberland, Southport, Wallasey (Cheshire), Wicken Fen, Snowdon and Northumberland; abroad, France (once), Bavaria, Prussia, Finland and Norway; occurs on the sea coast or on high inland moors. *Adult* in autumn. First occurrence—the author, Saddleworth, October, 1902.

V.C. 62.—Eston, ♀, J.W.H.

V.C. 63.—Pole Moor, 1♂, Wholestone Moor, 1♀, moor near Jerusalem Farm (Slaithwaite), ♀, Drop Clough, 1♀, Butternab Wood (Huddersfield), 3♀s, Honley Old Wood and Harden Clough, 1♂, 1♀, Saddleworth, near the "Pots and Pans" Rocks, 1♂, all from heather.

V.C. 64.—King Wood (Adel), 1♂.

P. huthwaitii Camb.

Widely distributed in the British Isles, as far north as Inverness and St. Kilda, and in some places as in the north of England not uncommon; abroad, Sweden, and Central Europe; amongst grass and rushes usually in damp ground. *Adult* autumn to spring. First occurrence—the author, Dean Head, Sept., 1900.

V.C. 61.—Pulfin Bog (Beverley), 1♂, 2♀s, E.A.P.; Brough, Sandholme, Hornsea Mere and Kelleythorpe, ♀s, Bridlington Cliffs, both sexes, Binnington, Broomfleet, T.S.; river bank above Selby, both sexes, W.P.W., W.F.; Bubwith, J.F.

V.C. 62.—Grangetown, 2♀s, G.B.W.; Tees mouth, common on both sides, J.W.H.; Hayburn Wyke, 1♂, 1♀.

V.C. 63.—Loversal, H. V. Corbett; Lower Dungeon Wood and banks of the Aire (Shipley), Harden, W.P.W.; Dolly Clough (Meltham), both sexes, W.P.W., W.F.; Bottoms Wood, Lane, Scout Wood, Slaithwaite Moor, Cupwith Reservoir, Barrett Clough, Ainley Place and Clough House Woods, Dean Head, both sexes but not in any quantity except Ainley Place and Clough House Woods—all near Slaithwaite; Drop Clough, 2♂s; Marsden Clough (Holmfirth); Pennyspring Wood (Huddersfield); Lepton Great Wood.

V.C. 64.—Saltaire, ♀, and Horton in Ribblesdale, 1♀, W.P.W.; Littondale, F.B.; East Keswick in a field at Argyle House, 1♂, 1♀.

Gen. *Mengea* F.O.P. Cb., 2-2.

[Gen. *Tmeticus* ad part.]

M. warburtonii Camb.

A local spider noted for Southport, Glamorgan, Staffs., Cheshire, Penrith, Northumberland and Wicken Fen; in swampy ground, usually plentiful where it occurs. First occurrence—T. Stainforth, Hornsea, Aug., 1908.

V.C. 61.—Hornsea Mere, 3♂, 4♀s, Sandholme, 1♂, T.S.; Skipwith Common, 1♂, 6♀s.

V.C. 62.—Eston Moor, 1♀, J.W.H.

M. scopigera Grube.

A northern species on record for the six northern counties, Staffs., Isle of Man., Forres and Glasgow, and Glamorgan the only southern county; 1♂, Co. Carlow, Ireland; abroad, Sweden, France, Prussia and Siberia; among grass and herbage, heather and furze. *Adult* August and September. First occurrence—the author, Ravenscar, Aug., 1904.

V.C. 61.—Boynton Woods, 1♀, T.S.

V.C. 62.—Cleveland, 'fairly plentiful everywhere,' J. W. H.; Ravenscar, 1♂, Goathland, 1♀, Marske, cliffs near cemetery and beneath furze bushes near the fox covert, both sexes, adult and immature.

V.C. 64.—Valley of Desolation, Bolton Woods, both sexes, adult and immature and Lower Dungeon Wood, Shipley, 2♂s, W.P.W.

(*To be continued*).

In Memoriam.

THOMAS BOYNTON, F.S.A.

The death is announced of Thomas Boynton, F.S.A., of Bridlington, at the age of 89, and thus passes away the last of a trio of antiquaries who have spent long lives in investigating and collecting pre-historic and other antiquities in East Yorkshire. J. R. Mortimer (whose collection formerly at Driffeld—now at Hull—is well known), died at the advanced age of 87,* : Canon Greenwell—also well known for his explorations in local barrows—died at the advanced age of 98.† And now Thomas Boynton follows in his ninetieth year. Evidently the collecting of prehistoric antiquities is not a hobby likely to shorten one's life.

Mr. Boynton, while farming at Ulrome, in Holderness, made the discovery of the well-known pile-dwelling—the oldest in the country—the relics from which are now in the British Museum. On retiring to Bridlington, many years ago, he was able to spend much of his time in the neighbouring villages and in this way obtained a really fine collection of weapons of the New Stone and Bronze Ages, as well as later antiquities. Pottery and China were also sought, and in addition Mr. Boynton, being a remarkably good shot, had some fine birds—some of great local interest. Mr. Boynton was not married, and his collection will, no doubt, be placed in the National or other museums.

THOMAS HEY.

Thomas Hey, who for more than twenty years regularly attended the Yorkshire Fungus Forays, died at Sheffield on October 15th, 1919. Although he had resided in Derby during his many years' service with the Midland Railway Company, Mr. Hey was a Yorkshireman by birth. He might be termed an 'all round' Naturalist, as he had in turn taken up Conchology, Lepidoptera, Coleoptera and Botany, with Mycology acknowledged as his favourite pursuit in later years.

He was also a capable taxidermist and photographer. His cameras were usually home made, and he also constructed his own microscopes. As a pedestrian he frequently recalled notable achievements, and his many tales of adventure with the sporting gun disclosed his attachment to and ability in the use of this weapon.

He was one of the founders of the British Mycological Society,

*See *Naturalist*, 1911, pp. 329-330.

†See *Naturalist*, 1918, pp. 104-6.

and also the founder and for many years President of the Midland Railway Natural History Society, with which the Derby Naturalists' Society (of which he was also a member) became incorporated.

At the Annual Fungus Forays of the Midland Railway Society, it was Mr. Hey's delight to have present one or two Yorkshire Mycologists. The late Chas. Crossland, Mr. Alfred Clarke and the present writer have all been recipients of free railway passes to Derby for these popular functions. at which were also usually present the late Thomas Gibbs and Mr. T. B. Roe, now of the Mycological Committee of the Yorkshire Naturalists' Union. The programme consisted of the adjoining districts being worked by several collecting parties on the Saturday afternoon, a display of named specimens in the excellent Midland Railway Institute in the evening, with an address by the visiting Yorkshireman to follow. Mr. Hey, as president, occupied the Chair upon these occasions. A numerous attendance of the public was always assured. The 'critical species' were usually worked out on the following day. Facially, the deceased, it was often remarked, strongly resembled Bismarck. Although in his eightieth year, Mr. Hey remained hearty and active, and only a fortnight before his decease he accompanied a party of Naturalists on a fifteen miles' walk. The interment was at Wharton, near Carnforth.—A. E. PECK.

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CORRESPONDENCE.

LARGE PIKE AND HERONS.

JUDGING from Mr. Riley Fortune's addendum to my notes on this subject, the *modus operandi* of herons in removing large pike from water has not been generally observed by naturalists. Few of them have studied field ponds, small water areas and lakelets presumably; my lot has been cast among such trifling waters. I even now cannot see in my accounts of what once took place at Twigmoor anything that suggests *the lifting of a ten-pound pike by a heron*. Certainly such an idea has never entered my brain, powerful though the heron is for its size. All the fish that I have seen at Twigmoor, and one elsewhere, had been 'run out' of the water in April. The late Rev. R. Sutton pointed out to my father and me that all these fish had a hole or holes in their backs behind their shoulders. He practically gave us the following explanation of the heron's method of work:—'Suddenly struck by the bird with its terrible beak, when the fish was in the shallows for breeding purposes, and the bird between it and "the deeps" the pike usually frequent; the fish's own struggles to escape propel it landward, along with the push of the bird assisted by its powerful wings. The fish could only move in one direction, *i.e.*, the opposite one to which it was struck by the bird, to escape the terrible thrust of its dart-like bill from behind.' The larger fish were laid about three feet from the water's edge. The smaller a little more distant perhaps. They had been a fair time out of the water, all I should judge some days, when I saw them; and at that time there was no visible trace of any struggle, as the soil is sandy there.

Now at the time there was a heronry of about sixty nests, according

to the then keeper, in Broughton Woods, less than one mile away, and Mr. Sutton was one of the best ornithologists of his day. He said: 'Pike were only thrust out of the water in the months of March and April by my ponds.' That is to say, only when they are in the shallows for breeding, not feeding, purposes. He also pointed out to us that all the fish had been practically struck in the same place and at the same angle, that is, from behind in the direction to cause motion towards the land by a bird on the deep-water side of them. This was the fact excepting in the case of a much smaller fish, perhaps of two pounds weight, which was lying from fifteen to twenty feet at least from the pond's edge. This had marks on both sides of it. An effort may have been made to swallow it, though I have been told by keepers a two-pound trout will 'throttle' a heron. I have no personal experience of this.

I saw these fish in April, 1868 or 1869, when hibernated specimens of the female Brimstone (*Gonepteryx rhamni*) were on the wing by the wood-side or sucking nectar from the Primrose flowers within the tree-shade. It was a red-letter day for me, I had never seen them before. Again in April, 1888, at a bend of the brook at Harrington, Northamptonshire, which had a much greater water flow then, than in later years when I have visited it, I met with another case. This stream at that date was much frequented by herons, which bothered me sadly when duck shooting, and it was there that I thoroughly studied the ways of breeding pike. As I was on my way to shoot a pike with my rifle, I found an unspawned and holed female fish landed on a mud bank two or three feet from the water. It was, I judged, an eight-pounder, holed behind the shoulders in Mr. Sutton's critical spot, precisely like those of my native county. There was only this difference, because the pike had only been landed just before I arrived, that on the Upper-Lias clay which forms the bed of Harrington Brook, I could observe the track the fish had followed in being run up and along the mud bank, for its line of movement was plainly to be seen from the water's edge to the spot it was lying on, as also the footprints of a fully grown, I should judge, aged heron.

I know no other bird which has fished for pike in the Twigmoor ponds except the Osprey, and, as every naturalist knows, it is well-furnished for cutting up large fish. So the fish I saw with Mr. Sutton and my father on the land cannot have been the result of an Osprey's stoop. At times there were plenty of otters on the Brook at Harrington, as I have them here in the river or becks at Cadney now and again. Their mode of eating their prey is quite characteristic—they take the shoulders of the fish and little else, and never hole them to my knowledge. A five to six-pound fish is the largest I have ever seen otter eaten anywhere. There was no 'trail' of the otter at the time on Harrington Brook near this heron stranded fish. I have had the fullest opportunities of studying the ways of herons, and my notes may come later. Here it is enough to remark that it is a pity that the Rev. R. Sutton was no writer, his knowledge of the heron and black-headed gull was unique. His collection of the eggs of *Larus ridibundus* made during a life-time on the Twigmoor Ponds was the finest type collection I ever saw, and no doubt in its day the finest that existed.—E. ADRIAN WOODRUFFE-PEACOCK, Cadney, Brigg, Lincs.

—:O:—

In *Man* for November, Sir W. Ridgway describes a peculiar chevron decoration round the collar of a bronze axe from Ireland, which he considers to be unique.

The Lancashire and Cheshire Naturalist for November contains notes on local Coleoptera by H. Britten; Bank Vole, by G. W. Ellison; *Planorbis dilatatus* and *Physa heterostropha* at Dukinfield, by J. W. Jackson and J. G. Kitchen, and reports of meetings. We are sorry the editor has given up the attempt to print 'S. L. Petty' correctly.

YORKSHIRE ENTOMOLOGY.

The Annual Meeting of the Entomological Section of the Yorkshire Naturalists' Union was held in the Leeds Institute on October 25th, 1919, Mr. G. T. Porritt presiding. There was a large attendance of members from all parts of the county.

The following records are additional to those referred to in the Annual Report. Mr. Rosse Butterfield observed that *Thecla rubi* is extending its range in Wharfedale. Mr. T. Ashton Lofthouse reported *Syrichthus alveolus* from Pateley Bridge and *Dasychira pudibunda* from Eston, the latter new to North Yorkshire. Mr. B. Morley remarked on the great abundance of *Hybernia aurantiaria* in High Hoyland Bank Wood, near Barnsley, and also on the general invasion of the West Riding by *Exapate congelatella* in great numbers, whereas only a few years ago the species was largely confined to the Moors. *Cerigo matura* has been taken at Wetherby, and *Luperina cespitis* at Sandburn by Mr. A. Smith, of York, and *Macroglossa stellatarum* and *Plusia moneta* at York, by Mr. W. Fabian, also at Driffeld by Mr. Harman.

The following lepidoptera were exhibited :—

By Dr. H. D. Smart : Yorkshire and Irish *Plusia interrogationis*; a fine series of *Pieris napi* containing a banded form, and Irish specimens with a bright yellow ground colour; melanica *Acronycta leporina* from Cannock Chase, blue females of *Lycaena icarus* from Sandsend; melanica *Psilura monacha*, a variable series each of *Polia chi*, *Hepialus hectus* and *Cidaria testata* and a male *Ematurga atomaria* with female coloration:

By Mr. G. T. Porritt : *Nigrosparsata-varleyata* and a *varleyata* with the forewings entirely black of *Abraxas grossulariata*, a series each of *Zygaena achilleae* from Scotland, and the new British tortrix *Poedisca pomedaxana* from Exeter.

Mr. T. H. Fisher : a short series of *Arctia caia* with lake coloured underwings from Skelmanthorpe. Dr. Corbett : variable series each of *Phigalia pedaria* and *Hybernia leucophaearia* from Doncaster; Mr. Rosse Butterfield : a large series of *P. pedaria*, the majority being melanica, from Keighley. Dr. Croft : a specimen of *Thecla quercus* var. *bellus* from Lancashire, and a large series of *Vanessa io*, many of which were var. *cyanosticta* from Grange. Mr. Musham : a series of light *Polia chi* from Selby, bred from larvae found feeding on garden beans; Mr. Ashton Lofthouse : black *P. pedaria* from Ingleby Greenhow, variable *H. leucophaearia* from the same place, *Notodonta chaonia*, Great Ayton; *Ebulea crocealis*, Linthorpe; *Leptogramma literana* and *Tinea tapetzella*, Ingleby Greenhow; *Penthina betuletana* from Eston; *Coccyx vacciniana* Rosedale, and *Eupacilia affinitana* from Grangetown. Mr. B. Morley : a series of *Argyresthia conjugella* and its black form *ævariella* from Haw Park, a variable series of males of *Himera pennaria*, a long series of *Crocallis elinguaris* showing great variation in the width of the centre bar of the forewings, all from Skelmanthorpe. In the series was a specimen of the newly named var. *signatipennis* and others closely approaching it. Mr. Stanger : many of the larger species of British larvae preserved and mounted on their respective food plants.

Coleoptera.—The most noteworthy exhibit was that of four specimens of the black variety, *funbris* Sturm, of the tiger Beetle, taken near Leeds by Mr. A. E. Thornes, who also shewed a fine series of colour varieties of *Strangalia armata* from Ryhill. Dr. Corbett brought some interesting beetles from the Doncaster district, taken by the late Capt. H. V. Corbett, and Mr. G. B. Walsh exhibited many beetles new to the Scarborough district, including *Euthia schaumii* Kies, *Micrambe villosa* Heer, and *Anoplus roboris* Suf. Dr. Fordham's exhibit was mainly confined to the orders Hymenoptera and Diptera, but he shewed several interesting East Riding beetles, including *Agrilus angustulus* Ile., *Aleochara cuniculorum* Kr. and *Atheta languida* Er.

The exhibits of Hymenoptera were by Mr. Lofthouse : a female

Mutilla europæa from Glaisdale; Mr. Rosse Butterfield: A series of male *Bombus soroensis* from Grassington to show variation, and a new variety in a species of *inquiline* in this species. On behalf of Mr. Musham *Crabro cribrarius* and its prey, and a split cane showing pupæ of *Odynerus*.

Mr. J. W. Carter: a peculiar abnormal specimen of *Sirex noctilio* taken by Mrs. Haigh-Lumby at Scarborough. From the apex of the basal joint of the right antenna there is a third antenna about half length of the normal, but while the normal is entirely black the additional one is testaceous.

Dr. Corbett: *Aphelochirus aestivalis* (Homoptera) from Lincoln.

Mr. Butterfield: a few Yorkshire diptera of the genus *Criorrhina* including *C. asilica*; and Mr. Morley a specimen of *Xiphura atrata* from Edlington Wood.

Mr. Rhodes: a group of mud nests and specimens of a large mason wasp, together with its parasite, and a number of carpenter bees from Malay.—B. MORLEY.

—: o :—

British Birds for November contains some remarkable photographs of the Black-necked Grebes which nested in Hertfordshire last year.

The Proceedings of the Geologists' Association, Vol. XXX., part 3, besides many illustrated reports of Excursions, contains an address by Dr. W. D. Lang, on "Old Age and Extinction in Fossils."

On November 6th a turtle was found on the Cleethorpes beach. It measured 4 feet by 3, and weighed about 2 cwt. It was sold for five guineas. Probably it was a captive from some sunken ship.

We learn from the press that at the sale of the late Sydney Webb's collection of British lepidoptera at Stevens's Rooms, London, fifteen specimens of the large copper butterfly secured sums totalling £112 7s., while an empty pupa case fetched £5. A number of 'well authenticated' British specimens of the Camberwell Beauty—(taken 1840-1888) were knocked down at prices ranging from 10s. to £2 each, whilst a variety of the common Pearl Bordered Fritillary, the ordinary form of which is worth only 2d., fetched £21. Nine other varieties of the Fritillary realised £76 12s. Another rarity—the Queen of Spain Fritillary—had 15 representatives included in the sale captured in the sixties and seventies. These fetched only £15 7s. 6d., though three varieties of that extremely common insect the Small Tortoiseshell (normal value 1d.) were purchased for £36. Likewise, 14 specimens of that rare visitor to Britain, the Bath White, realised only £13 15s. 6d.; while three varieties of the common Brimstone Butterfly (normal value 1½d.) fell to bidders at sums totalling £23 17s.

A conference was called last January by the joint invitation of the president of the Royal Society, the president of the British Academy, and others representing both those bodies and a large number of others, interested both in the production and distribution of knowledge, to frame, if possible, a scheme for a journal which should present in popular form the most recent results of research in all the chief subjects of knowledge. This conference appointed a committee, and their report was presented and adopted at the adjourned meeting held recently in the rooms of the Royal Society. The Rev. Canon Temple presided. The meeting approved the name 'Discovery' for the new journal and established a trust for its maintenance, the first trustees being: Sir Joseph J. Thomson, Sir Frederic G. Kenyon, Professor A. C. Seward, Professor R. S. Conway. The meeting approved of the agreement made provisionally with Mr. Murray as publisher, and of his and the committee's joint recommendation of Captain A. S. Russell, M.C., D.Sc., of the University, Sheffield. The first number will be issued on January 15th next, at the price of sixpence.

CLASSIFIED INDEX.

COMPILED BY W. E. L. WATTAM.

It is not an index in the strictest sense of that term, but it is a classified summary of the contents of the volume, arranged so as to be of assistance to active scientific investigators; the actual titles of papers not always being regarded so much as the essential nature of their contents.

CONTRIBUTORS.

- Atkinson, Jasper, 88, 294
- Bayford, E. G., F.E.S., 75-76
- Bell, Alfred, F.G.S., 57-59
- Bennett, A., F.L.S., 372
- Booth, H. B., F.Z.S., M.B.O.U., 34-35, 150-151, 275-276, 302, 370
- Brown, J. M., B.SC., F.L.S., F.C.S., 63-66, 79, 292, 330-332
- Burnley, A. I., 363-364
- Burrell, W. H., F.L.S., 41, 309
- Butterfield, E. P., 110-111, 215, 278, 279-280, 310, 337, 339, 373, 373-374
- Butterfield, R., F.E.S., 40, 79, 310
- Carter, J. W., 399
- Cheesman, W. N., J.P., F.L.S., 314-315
- Cheetham, C. A., F.L.S., 41, 44-45, 96, 151, 182, 244, 305, 307, 310, 380, 388, 389, 394-395
- Clarke, W. J., F.Z.S., 36, 245
- Corbett, H. H., M.R.C.S., F.L.S., 158-160, 272, 336, 371
- Couldwell, Charles, 182
- Day, F. H., F.E.S., 46, 77-79, 239-242, 327-328
- Dallman, A. A., F.C.S., 164-166
- Drabble, Eric, D.SC., F.L.S., 10-12, 151
- Drabble, Hilda, 10-12, 151
- Falconer, Wm., 21-25, 40-41, 137-140, 235-242, 267-270, 272, 273, 295-302, 305-306, 323-326, 356, 365, 368, 392-393, 400-403
- Firth, J. Digby, F.L.S., F.E.S., 272
- Fortham, W. J., M.R.C.S., L.R.C.P., F.E.S., 13-16, 39, 70-71, 102-104, 168, 210, 272-273, 274-275
- Fortune, R., F.Z.S., 79, 336, 340-341, 371
- Forrest, H. E., 104, 277-278
- Fysher, Greevz, 208, 305
- Garstang, Professor W., M.A., D.SC., 89-96, 123-134, 195-198, 231-233
- Grace, George, B.SC., 292
- Gyngell, W., 17-20, 72-74, 105-106, 174-176, 215, 263-266, 311-312, 333-336
- Hall, A. E., 246, 279
- Hartshorn, J., 306-307
- Hawksworth, E., 43
- Hewett, W., 36-37
- Holmes, John, 42, 304
- Ingham, W., B.A., 42, 209-210
- Irving, J., M.D., 38-39
- Jackson, J. W., F.G.S., 243-244
- Johnson, J. W. H., M.SC., 273
- Johnson, Walter, F.G.S., 225-230, 255-258, 287-290, 319-322
- Jones, R., 304-305
- Jourdain, F. C. R., 183
- Larder, J., 372
- Lees, F. Arnold, M.R.C.S., 188, 211-213, 341, 390-391, 399
- Malone, M., 309-310
- Mansbridge, W., F.E.S., 46, 135-136, 151, 213
- Mason, F. A., 208-209, 307-308
- Mason, Rev. W. W., 318
- Milsom, F. E., B.SC., 307
- Morley, B., 39, 272, 407-408
- Musham, J. F., F.E.S., 38-39, 40, 182
- Oldham, Charles, 292, 337
- Parkin, W. H., 271, 336
- Payne, J. H., 181, 311
- Peacock, E. A., Woodruffe-, F.L.S., F.G.S., F.E.S., 199-205, 246-247, 277, 278, 329-330, 340, 353-355, 405-406

CONTRIBUTORS—*continued.*

- Peacock, Tom W. Woodruffe-, 245
 Pearson, Wm. Hy., F.L.S., 136, 160
 Peck, A. E., F.L.S., 42, 396-399, 404;
 405
 Percival, F. G.; B.Sc., F.G.S., 291-292
 Pitt, Frances, 370
 Porritt, G. T., F.L.S., F.E.S., 40,
 47-48, 278, 280, 339-340, 374-375,
 380
 Porter, J., 388
 Proctor, Charles F., 183
- Robinson, J. F., 41
 Rowan, W., 9, 32
- Schlesch, Hans, 29-32
 Selous, Edmund, 167-168, 259-262,
 357-360, 381-385
 Sheppard, Thomas, M.Sc., F.G.S.,
 F.R.G.S., F.S.A. (SCOT.), 97-101, 107-
 109, 141-142, 161-163, 214, 293-294,
 386-389, 404
- Smith, Joseph, M.R.I.A., 60-62, 169-
 173
 Snelgrove, E., F.L.S., 177-180
 Stather, J. W., F.G.S., 387
 Stainforth, T., B.A., B.Sc., 234, 361-
 362
 Sykes, Mark L., F.R.M.S., 373
- Taylor, J. W., M.Sc., 122, 143-149
 Thompson, M. L., F.E.S., 210, 306
 Trueman, A. E., D.Sc., F.G.S., 5-9,
 67-69
- Wade, E. W., M.B.O.U., 35-36, 387
 Wattam, W. E. L., 26-28, 33-43,
 109, 206-210, 271-273, 303-308,
 308-310
 Welch, F. D., M.R.C.S., 47, 341
 Wilkinson, Henry J., 373
 Wilkinson, Johnson, M.B.O.U., 37-38
 Wilson, A., 369
 Woodhead, T. W., Ph.D., M.Sc., F.L.S.,
 33-43
 Wroot, H. E., 136

BOOK NOTICES.

ACARI.

- British Museum Publications (Natural
 History) Studies on Acari, No. 1.
 The Genus *Demodex*—Stanley Hirst,
 252

BIOLOGY.

- Journal of the Marine Biological
 Association, 314
 Ward, H. C. and Whipple, G. C.—
 Fresh-water Biology, 134

BIRDS.

- British Birds, 245, 273, 337, 376, 391
 British Ornithology, A Geographical
 Bibliography of, 378
 Selous, Edmund—Tommy Smith again
 at the Zoo, 310
 Witherby, H. F.—A Practical Hand-
 book of British Birds, 120, 189

COLEOPTERA.

- Notman, Howard—Coleoptera Illus-
 trata, 230

FLOWERING PLANTS.

- Bower, F. O., F.R.S.—Botany of the
 Living Plant, 343
 Lovell, John H.—The Flower and the
 Bee, 342
 Oliver, F. W., F.R.S.—The Exploita-
 tion of Plants, 66

- Ramsay, F. M.—Everybody's Flower
 Book, 66

FUNGI.

- Lister, Miss G., F.L.S.—The Mycetoza
 a short history of their study in
 Britain, 217
 — Guide to the British Mycetoza,
 314

GEOLOGY AND PALÆONTOLOGY.

- Bone, Prof. W. A.—Coal and its
 scientific uses, 218
 Boswell, Prof. P. G. H.—Refractory
 Sands, Part I., 217, 316
 Buckman, S. S.—Yorkshire Type
 Ammonites, Part XVII., 59;
 Part XVIII., 248; Part XIX., 315
 Hatch, F. H.—The Iron and Steel
 Industry of the United Kingdom
 under War conditions, 355
 Leith, C. K.—Structural Geology, 372
 Seward, A. C.—Fossil Plants—A
 Text Book for Students of Botany
 and Geology, Vol. IV., 372
 Ziegler, V.—Popular Oil Geology, 393

MAMMALIA.

- Kerr, J. G.—Text Book of Embryo-
 logy, Vol. II., Vertebrata, 342
 Harmer, Dr. S. F.—Fifth Report on
 Cetacea stranded on the British

BOOK NOTICES—*continued*

Coasts, 1917, 50 ; The same, 1918, 218-219
 Selous, Edmund.—Tommy Smith again at the Zoo, 310

MUSEUMS.

British Museum (Natural History), Booklet on Birds Beneficial to Agriculture—F. W. Frohawk, 219
 — Studies on Acari, No. 1—The Genus *Demodex*—Stanley Hirst, 252
 Halifax, Bankfield Museum, Notes of, No. XI., 85
 Hull Museum, Publications of, (Nos. 113-116), 181
 Norwich Museum, Report of, 280
 Wales, National Museum of, Annual Report of, 88
 Worthing Museum, Publications of, 248

ODONATA.

Lucas, W. J.—The Odonata of the Lancashire and Cheshire District, 380

ORTHOPTERA.

Fabre, J. Henri.—The life of the Grasshopper, 221

SCIENTIFIC HISTORY.

Adami, J. G.—Medical contributions to the study of Evolution, 185
 Bradford Antiquary, Part XX., 315
 Carey, A. E. and Oliver, F. W.—Tidal Lands: A Study of Shore Problems, 185
 Essex Naturalist, Part XII. of Vol. XVIII., 87 ; Vol. XIX., 375
 Hogg, Robert, F.R.H.S.—Educational Gardening, 220, 342
 Lancashire and Cheshire Naturalist, 80, 216, 282, 346
 Sheppard, Thomas, M.Sc., F.G.S.—Kingston-upon-Hull: before, during and after the Great War, 314
 Taylor, Ernest E.—Yorkshire Moors and Sea, 342
 Walter, H. E.—The Human Skeleton: an interpretation, 310
 Watts, W. W.—Shropshire: The Geography of the County, 393

SOCIETIES.

Belfast Naturalists' Field Club, Transactions of, 341
 Bootham School, York, Natural History, etc., Society, Annual Report of, 81, 364
 Botanical Society and Exchange Club, Report of for 1918, 391
 Bournemouth Natural Science Society, Proceedings of, Vol. X., 377

Brighton and Hove Natural History Society, Annual Report of, 364
 British Association, Annual Report for 1918, 281
 Chester Society of Natural Science, Transactions of, 341
 Croydon Natural History and Scientific Society, Proceedings of, 12
 Cumberland and Westmorland Antiquarian, etc., Society, Transactions of, Vol. XIX. (N.S.), 379
 Derbyshire Archæological and Natural History Society, Transactions of, 316
 East Anglia Prehistoric Society, Proceedings of, 82, 352
 East Riding of Yorks. Antiquarian Society, Transactions of, Vol. XXII., 380
 Hull Scientific and Field Naturalists' Club, Transactions of, Vol. IV., 379
 Leeds Astronomical Society, Transactions of, 80, 364
 Lincolnshire Naturalists' Union, Transactions of 1918, 377
 Liverpool Naturalists' Field Club, Proceedings of 1918, 377
 London Natural History Society, Transactions of, 1917, 215
 Manchester Literary and Philosophical Society, Transactions of, 344
 Manchester Microscopical Society, Transactions of, 364
 National Trust for Places of Historic interest, etc., Annual Report of, 364
 Northumberland, Durham and Newcastle-on-Tyne, Natural History Society, Transactions of, 81
 Northants. Natural History Society, Journal of, 242
 Palæontographical Society, Transactions of, Vol. LXXI., 284
 Perthshire Society of Natural Science, Transactions of, 242
 Sedbergian Sedgwick Society, Transactions of, 378
 Selby Scientific Society, Annual Report of, 84
 South-Eastern Union of Scientific Societies, Transactions of, 347
 Yorkshire Geological Society, Transactions of, Part IV. of Vol. XIX., 2

MISCELLANEA.

Millais, J. F.—Life of Frederick Courtenay Selous, D.S.O., 4
 Moorman, Prof. F. W.—Songs of the Ridings, 191
 Vasculum, The, 219

ILLUSTRATIONS.

BIRDS.

Bunting, Corn, 189
 Bunting, Snow, Juvenile, Plate I.
 Jackdaw and other Birds, Diagrammatic representations of Food percentages of, 193, 194
 Lark, Sky-, Juvenile, Plate I.
 Lark, Wood-, Juvenile, Plate I.
 Pigeon, Wood, contents of crop, 122
 Pipit, Richard's, First winter, Plate I.
 Pipit, Rock, Juvenile, Plate I.
 Sparrow, House, 189
 Sparrow, Tree, 189

COLLEMBOLA.

Megalothorax minimus, 63

FISH.

Hearing Organs of Fishes, 61, 171

FUNGI.

Hirneola auricula-judæ, Fr., 225
 Lichens on Vertebra of a Sheep, 87

GEOLOGY AND PALÆONTOLOGY.

Ammonite or Mammoth? 116, 117

MOLLUSCA.

Admete viridula sheppardi sp. nov., 57
 Astarte apiculata sp. nov., 57
 Vertigo alpestris, 31
 — eumicra Bourguignat, 29
 — genesii Gredler, 29

PORTRAITS, VIEWS AND MAPS.

Barnes, Richard, 44
 Crossland, Charles, 177
 Drake, H. C., F.G.S., I, 107
 Gibbs, Thomas, 177
 Gormire Lake, 206
 Lamplough, Edward, 181
 Nottingham and Bilborough, Sketch map of lane between, 6
 Parkin, George, 75
 Paynter, Henry Augustus, 276
 Roebuck, W. Denison, M.Sc., F.L.S., 143
 Saltwick Bay, Whitby, 243
 Spring-gun enclosed in Oak Tree, 214

SPECIES AND VARIETIES NEW TO SCIENCE BROUGHT FORWARD IN THIS VOLUME.

MOLLUSCA (MARINE).

Admete viridula sheppardi sp. nov., figured and described, and Astarte apiculata sp. nov., figured and described, both from the Holderness Basement Clays, Yorkshire, A. Bell, 57-59

ARACHNIDA.

Troglohyphantes margersoni, sp. nov.,

taken south of Buttermere, and Maro humicola, sp. nov., taken at Slaithwaite and Hebden Bridge, figured and described, W. Falconer, 295-302

DIPTERA.

Ceratopogon braueri Wasmann, taken at Grassington by Mr. Rosse Butterfield, noted, 157

NOTES AND COMMENTS.

January. — Petroleum — Linnean Species of Mollusca — Yorkshire Geologists — Science and Nationality — Yorkshire Natural Science — Yorkshire Naturalists — Selous — The Sportsman, 1-4.

February. — A wet month — Terrestrial Acari — Yorkshire Specimens — An Entomological Contortionist — British Whales — Popularising Science — Leeds War Memorial — Fossil Earthquakes — Old River Channels — Earthquake Phenomena — Puzzles for Mining Men — 'Lurching' — 'Rock-Riders in Cumberland' — Sandstone Dykes — Age of Dykes — Durham Glacial Beds —

Læss — A Yorkshire Comparison — Carboniferous of Clitheroe — Goniatic Zones, 49-56

March. — Bootham School Naturalists — Northumberland Naturalists — Britain's Mineral Resources — Whitby Jet — East Anglian Pre-Historians — Illustrations — The Report — Other Contributions — The Vasculum — Selby Naturalists — An Ancient 'Comb' — A Mammoth's Nest — One of the Fibulariidae — Origin of Flint — Essex Naturalists — A 'Crop' — Science Progress — A National Museum, 81-88

April. — The Natural History Museum — An Appointment — A Detri-

NOTES AND COMMENTS—*continued.*

ment to Science—The 'Creators'—Natural History Museum—An Appointment made—Dr. Harmer's Qualifications—Church and Science—Ammonite or Mammoth—The 'All-seeing Eye'—An Archaeologist's Eye—Man Proud Man—The first restoration of an Extinct Mammal—Underground Geology—A Yorkshire analogy—A side issue—Summary of Arguments—A Handbook of British Birds—The Plan—Plovers and their Eggs—A Pigeon's Crop, 113-122

May.—Problems of Coal—Waste of Coal—Campodeidae: a plea for Material—Yorkshire Campodeae—A check list of Myriopods—Diplopodic Synonymy—A deduction—A variety promoted—A larval species—Colour-sense of Wasps—Female Fellows—Myrmecophilous Notes, 153-157

June.—Tidal Lands—Royal Commissions—Blakeney Point—Medical Contributions—And the Study of Evolution—A discussion—Summary of Contents—The British Museum—Cheiranthus II., 1919—Moir Jaw—Practical Handbook of British Birds—Local Societies and Adult Education—Exeunt Sea-Eagle—Dates of Publication—A new Songster—Food of Wild Birds—A Verdict, 185-194

July.—The Mycetozoa—Refractory Sands—Coal and its Scientific uses—Our Whales, etc., in 1918—Previous Records—Beneficial Birds—The Vasculum—The Naturalist's Note Book, New Series—Educational Gardening—The life of the Grasshopper—Distribution of Marsh Ringlet—The Yorkshire Naturalists Union—Ice Transport—Yorkshire Shelly Drift—A well-armed Glacialist—Anchor Ice—Another Museum for Hull, 217-224

August.—The Museums Association—The Dinner—The President's

Address—The War and Art Treasures—A Minister's Action—Salaries of Curators—Papers read—Visits to Museums—Studies on Acari—Yorkshire Millstone Grit—Songs of the Birds—Nature Poems, 249-254

September.—British Association Report for 1918—Sunset and Soulshine—The Selous Collection—Lancashire and Cheshire Naturalist—Early Record of *Cypripedium Calceolus*—Sir William Boyd Dawkins—Fossil Skulls—And Compression, Brachy and Dolichocephalic—The Galley Hill Skull—British 'Oil-pools'—Palaeontographical Society—Illustrations—Preserving Plants in Formalin—South-Eastern Naturalists—The Bulletin, 281-286

October.—'Oil Spurts in a Rectory'—Mixed Spirits—The Cause—A Peace Souvenir—Marine Biology—British Mycetozoa—Type Ammonites—Bradford Antiquaries—Derbyshire Naturalists—And their Publication—Sands—Iron Ores—Lincolnshire Ores—Septarian Structure—The Drake Collection—The Bower Collection, 313-318

November.—The Geological Magazine—The Cause of the Crisis—Past and Present—Lancashire Naturalists—Entomological Magazines—The South-Eastern Naturalist—Treasure Trove, etc.—Rats—'Blue John'—Evolution of the Ammonites—Leading Principles—Kelestominæ—Dr. J. W. Evan's Address—Local Geologists—Wasted Energy—North of England Borings—Museums—Prehistorians, 345-352

December.—Bournemouth Naturalists—The Cheviots—Lincolnshire Naturalists—Liverpool Naturalists—Sedbergian Sedgwick Society—Ornithological Bibliography—Prof. J. E. Marr, sc.d., f.r.s.—Roman Brooches—Hull Naturalists—East Riding Antiquaries—Odonata, 377-380

CHESHIRE.

Hymenoptera.—*Acanthomyops alienus* Först, taken at Wallasey noted, 157

Lepidoptera.—Reports of Meetings of Lancashire and Cheshire Entom-

ological Society, W. Mansbridge, 151, 213

Geology and Palaeontology.—Bibliography with respect to the Geology and Palaeontology of the North of

CHESHIRE—continued.

England (Yorkshire excepted) during 1918, T. Sheppard, 96-101, 141-142
Scientific History.—Lancashire and

Cheshire Naturalist, 80, 344, 346-406
Societies.—Chester Society of Natural Science, Transactions of, 341

CUMBERLAND.

Arachnida.—New and rare British Spiders, figured and described, including Cumberland records, W. Falconer, 295-302

Birds.—Jackdaw's unusual nesting site, W. W. Mason, 318

Coleoptera.—*Calasoma inquisitor* taken near Tilberthwaite, G. Grace, 292

Flowering Plants.—Occurrence of *Goodyera repens* at Armathwaite and Corby, F. H. Day, 46

Geology and Palaeontology.—Bibliography with respect to the Geology and Palaeontology of the North of England (Yorkshire excepted) during 1918, T. Sheppard, 96-101,

141-142; Report on Dr. A. Gilligan's paper 'On Sandstone Dykes or Rock-Riders in the Cumberland Coalfield,' read at Meeting of Geological Society of London, 53-54

Mammalia.—*Sorex minutus* (Lesser Shrew), occurrence of in Lake District, C. Oldham, 292

Reptiles.—Palmated Newt taken from two Cumberland tarns, C. Oldham, 337

Societies.—Cumberland and Westmorland Antiquarian, etc., Society, Transactions of, Vol. XIX. (N.S.), 379

DERBYSHIRE.

Acari.—Some Derbyshire Plant Galls, J. M. Brown, 330-332

Coleoptera.—Some Derbyshire Plant Galls, J. M. Brown, 330-332

Collembola.—The Apterygota of Yorkshire and Derbyshire, with figures of *Magalothorax minimus*, J. M. Brown, 63-66

Diptera.—Some Derbyshire Plant Galls, J. M. Brown, 330-332

Flowering Plants.—A few notes of plants occurring in North-east Derbyshire (incorporated in List of Butterflies for that area), E. and H. Drabble, 10-12

Fungi.—Some Derbyshire Plant Galls J. M. Brown, 330-332

Geology and Palaeontology.—Note on boring for petroleum at Hardstoft, near Chesterfield, 1; Bibliography with respect to the Geology of the North of England (Yorkshire ex-

cepted) during 1918, T. Sheppard, 96-101; Notes on 'Blue John,' 348

Homoptera.—Some Derbyshire Plant Galls, J. M. Brown, 330-332

Hymenoptera.—Some Derbyshire Plant Galls, J. M. Brown, 330-332

Lepidoptera.—The Butterflies of North-east Derbyshire, E. and H. Drabble, 10-12; Further note thereon, 151; Further Derbyshire Butterfly records, J. M. Brown, 79

Protura.—The Apterygota of Yorkshire and Derbyshire, with figure of *Magalothorax minimus*, J. M. Brown, 63-66

Societies.—Derbyshire Archaeological and Natural History Society, Transactions of, 316

Thysanura.—The Apterygota of Yorkshire and Derbyshire, with figure of *Magalothorax minimus*, J. M. Brown, 63-66

DURHAM.

Geology and Palaeontology.—Bibliography with respect to the Geology and Palaeontology of the North of England (Yorkshire excepted) during 1918, T. Sheppard, 96-101, 141-142; Report on Mr. C. T. Trechmann's paper 'On a Bed of Interglacial Löss and some Pre-glacial Fresh-water Clays of the

Durham Coast, read at meeting of Geological Society of London, with a Yorkshire Comparison, 54-55; Notes on 'Blue John,' 348

Societies.—Northumberland, Durham, and Newcastle-on-Tyne Natural History Society, Transactions of, 81

ISLE OF MAN.

Arachnida.—New and rare British Spiders, figured and described, including records from the Island, W. Falconer, 295-302

Geology and Palaeontology.—Bibli-

ography with respect to the Geology and Palaeontology of the North of England (Yorkshire excepted) during 1918, T. Sheppard, 96-101, 141-142

LANCASHIRE.

Arachnida.—New and rare British Spiders, figured and described, including Lancashire records, W. Falconer, 295-302

Geology and Palaeontology.—Bibliography with respect to the Geology and Palaeontology of the North of England (Yorkshire excepted) during 1918, T. Sheppard, 96-101; Report on Drs. Wheelton Hind and A. Wilmore's paper on 'The Carboniferous Succession of the Clitheroe Province,' read at a meeting of the Geological Society of London, 56

Lepidoptera.—Reports of Meetings of Lancashire and Cheshire Entomological Society, W. Mansbridge, 151, 213

Mammalia.—Records of stranded Cetacea on British Coasts, 1917, 50; Common Seals in Morecambe Bay, H. B. Booth, 370

Neuroptera.—Note on Dragon fly records, 248

Personal Notices.—In Memoriam notice of S. L. Petty, 248

Scientific History.—Lancashire and Cheshire Naturalist, 80, 344, 346, 406

Societies.—Manchester Literary and Philosophical Society, Transactions of, 344; Manchester Microscopical Society, Annual Report of, 364; Liverpool Naturalists Field Club, Proceedings of 1918, 377

LINCOLNSHIRE.

Annelida.—Note on Cocoons of the Horse Leech found at Cadney, E. A. Woodruffe-Peacock, 278

Arachnida.—New and rare British Spiders, figured and described, including Lincolnshire records, W. Falconer, 295-302

Birds.—Structure of Greenfinch's Nest, E. A. Woodruffe-Peacock, 277; Herons and Pike, E. A. W. Peacock; Footnote by R. Fortune, 340-341; Further note thereon, E. A. W. Peacock, 405-406

Campodeae.—Note on Lincolnshire species, 154

Chalcididae.—*Syntomapsis druparum* Bohem, from seed of *Crataegus oxyacanthoides*, and an unnamed Chalcid from seeds of *Chaerophyllum temulum*, taken at Cadney, E. A. W. Peacock, 329-330

Crustacea.—Occurrence of *Polyxenus lagurus* (Bristly Millipede) at Barton-on-Humber, T. Stainforth, 234

Flowering Plants.—Whitethorn Seed Notes, E. A. W. Peacock, 353-355; Large specimens of *Acer campestre* at Louth, J. Larder, 372

Hymenoptera.—*Myrmica laevinodis* Nyl, var. *rugindo-laevinodis* Forel, taken at Cadney by Rev. E. A. Woodruffe-Peacock, new county record, noted, 157; *Syntomapsis druparum* Bohem from seed of *Crataegus oxyacanthoides*, and an unnamed chalcid from seeds of *Chaerophyllum temulum*, taken at Cadney, E. A. W. Peacock, 329-330

Geology and Palaeontology.—Bibliography with respect to the Geology and Palaeontology of the North of England (Yorkshire excepted) during 1918, T. Sheppard, 96-101, 141-142; Notes on the Iron ore of the Northern Counties, 317

Mammalia.—Records of stranded Cetacea on British Coasts, 1917, 50

Mollusca (Land and Fresh-water).—*Vertigo pygmaea* (Drap.) found at Melton Ross, T. W. Woodruffe-Peacock, 245

Societies.—Lincolnshire Naturalists' Union, Transactions of 1918, 377

Spongida.—Finding of fresh-water Sponge *Ephydatia mulleri* at Cadney, T. W. Woodruffe-Peacock, 245

NORTHUMBERLAND.

Geology and Palaeontology.—Bibliography with respect to the Geology and Palaeontology of the North of England (Yorkshire excepted) during 1918, T. Sheppard, 96-101, 141-142

Societies.—Northumberland, Durham and Newcastle-on-Tyne Natural History Society, Transactions of, 81

NOTTINGHAMSHIRE.

Geology and Palaeontology.—Bibliography with respect to the Geology and Palaeontology of the North of England (Yorkshire excepted) during 1918, T. Sheppard, 97-101, 141-142

Mollusca (Land and Freshwater).—The Common Banded Snail: a study in variation, A. E. Trueman, 5-9, 67-69

WESTMORLAND.

Coleoptera.—List of Westmorland Coleoptera, F. H. Day, 77-79, 239-242, 327-328

Flowering Plants.—Occurrence of *Goodyera repens* near Carlisle, F. H. Day, 46

Reptiles.—Palmated Newt from Lingmoor Tarn, Langdale, C. Oldham, 337

Societies.—Cumberland and Westmorland Antiquarian, etc., Society, Transactions of, Vol. XIX. (N.S.), 379

YORKSHIRE.

Acari.—List of Yorkshire species of Terrestrial Acari, dealing with the Thrombidiidae and Gamasidae mentioned in Rev. J. E. Hull's 'Terrestrial Acari of the Tyne Province,' 49; Species noted on visit of Yorkshire Naturalists' Union to Ryhill, W. Falconer, 272; Some Derbyshire Plant Galls, including Sheffield district records, J. M. Brown, 330-332; Plant galls noted in the Scarborough District, W. Falconer, 393

Arachnida.—The Spiders of Yorkshire, W. Falconer, 21-25, 137-140, 235-242, 267-270, 273, 323-326, 365-368, 400-403; Annual Report of Arachnida Committee of Yorkshire Naturalists' Union, for 1918, W. Falconer, 40-41; Species noted on visit of Yorkshire Naturalists' Union to Ryhill, W. Falconer, 273; New and Rare British Spiders, figured and described, including Yorkshire records, W. Falconer, 295-302; Species noted on visit of Yorkshire Naturalists' Union to Hawes, W. Falconer, 305-306

Archaeology.—An Ancient 'Comb,' illustrated, 85

Birds.—Abundance of Wheatear at Eastby, near Skipton, W. Rowan, 9; Common Wild Birds of the

Scarborough District, W. Gyngell, 17-20, 72-74, 105-106, 174-176, 263-266, 333-336; Resolution in regard to protection of the Green Plover throughout the county, passed at Annual Meeting of the Union, 1918, 26-27; Note on Yorkshire Herons, W. Rowan, 32; Annual Report of Vertebrate Section of Yorkshire Naturalists' Union for 1918, as to West Riding by H. B. Booth; as to East Riding by E. W. Wade; as to North Riding by W. J. Clarke; as to York District by W. Hewett, 34-37; Annual Report of Yorkshire Naturalists' Union Wild Birds, etc., Protection Committee for 1918, Johnson Wilkinson, 37-38; Moorhen nesting in a tree, E. P. Butterfield, with footnote by R. Fortune, 79; Corn-crake calling whilst perched in hedge, E. P. Butterfield, 79; Birds in North-west Leeds, J. Atkinson, 88; Cuckoo's Eggs and foster parents, E. P. Butterfield, 110; Former Status of the Starling, E. P. Butterfield, 110-111, 215; Further Notes thereon, F. C. R. Jourdain, 183; W. Gyngell, 215; Late stay of Swifts, E. P. Butterfield, 111; Protection of Plover and Eggs in West Riding, 121; Song

YORKSHIRE—*continued.*

of the Birds, being poems on the song of the Chaffinch, Greenfinch, Wren, Hedge Sparrow, Willow-Warbler, and Tree-Pipit, Prof. W. Garstang, 195-198 ; Bird-life noted on visit of Yorkshire Naturalists' Union to Coxwold, W. E. L. Wattam, 207-208 ; Songs of the Redstart, Whitethroat, and Garden Warbler, expressed in verse, Prof. W. Garstang, 231-233 ; Bird life noted on visit of Yorkshire Naturalists' Union to Ryhill, W. H. Parkin, 271 ; White Grouse Chick at Bolton Abbey, J. Atkinson, 294 ; Skylark killed by horsehair entanglement, J. Atkinson, 294 ; Blackbirds using same nest twice, H. B. Booth, 302 ; Bird life noted on visit of Yorkshire Naturalists' Union to Hawes, R. Jones, 304-305 ; Bird life noted on visit of Yorkshire Naturalists' Union to Pateley Bridge, E. P. Butterfield, 310 ; Note on Woodcock shot at Burghwallis, H. H. Corbett, with footnote by R. Fortune, 336 ; Disappearance of Tree Creeper from familiar nesting sites, W. H. Parkin ; Footnote by R. Fortune, 336 ; Herons and Pike, E. A. W. Peacock ; Footnote by R. Fortune, 339-341 ; Nesting of the Heron in Nidderdale, R. Fortune, 371 ; Black-necked Grebe in Washburn Dale, R. Fortune, 371 ; Comorant at Doncaster, H. H. Corbett, 371 ; Blackbird and Song Thrush using same nest twice, E. P. Butterfield, 373 ; Bird life noted on visit of Yorkshire Naturalists' Union to Spurn, E. W. Wade, 387

Campodeae.—Notes on Yorkshire species, 154

Coleoptera.—Notes on the Entomology of the Bubwith District (including Skipwith Common), W. J. Fordham, 13-16, 70-71 ; Annual Report of Coleoptera Committee of Yorkshire Naturalists' Union for 1918, W. J. Fordham, 39 ; Yorkshire Coleoptera in 1918, including seven additions to the County List, W. J. Fordham, 102-104 ; Species noted on visit of Yorkshire Naturalists' Union to Coxwold, M. L. Thompson and W. J. Fordham, 210 ; Species noted

on visit of Yorkshire Naturalists' Union to Ryhill, W. J. Fordham, 272-273 ; Species noted on visit of Yorkshire Naturalists' Union to Hawes, M. L. Thompson, 306 ; Some Derbyshire Plant Galls, including Sheffield District records, J. M. Brown, 330-332 ; Notes on rare species of Coleoptera taken in the East and North Ridings, T. Stainforth, 361-362 ; Report of Meeting of Entomological Section of Yorkshire Naturalists' Union held at Leeds in October, B. Morley, 407-408

Collembola.—The Apterygota of Yorkshire and Derbyshire, with figures of *Megalothorax minimus*, J. M. Brown, 63-66

Crustacea.—Occurrence of *Polyxenus lagurus* Linné (Bristly Millepede) in Saltwick Bay, with illustration of site, J. W. Jackson, 243-244 ; Species noted on visit of Yorkshire Naturalists' Union to Hawes, W. Falconer, 305 ; Notes on *Armadillidium pulchellum* (Brandt) and other rare Yorkshire species taken in the East and North Ridings, T. Stainforth, 361-362

Diptera.—Notes on the species occurring in the Bubwith District (including Skipwith Common), and new county records, W. J. Fordham, 14-16, 70-71 ; Annual Report of Diptera, etc., Committee of Yorkshire Naturalists' Union for 1918, J. F. Musham, 40 ; *Orthocladus albolineatus* Mg. and *Limosina crassimana* Hal., both new to Yorkshire, captured near Moughton Scar, C. A. Cheetham, 96 ; *Ceratopogon braueri* (Wasmann), new to Britain, taken by Mr. Rosse Butterfield at Grassington ; Also occurrence of *Microdon mutabilis* at same place, 157 ; *Pachyrrhina imperialis* (Mg.) and *Mycophaga fungorum* (Deg.) taken at Farnley, Leeds, new county records, C. A. Cheetham, 182 ; Species noted on visit of Yorkshire Naturalists' Union to Coxwold, W. J. Fordham, 210 ; Yorkshire Diptera notes, including new county species, C. A. Cheetham, 244 ; Species noted on visit of Yorkshire Naturalists' Union to Hawes, C. A. Cheetham,

YORKSHIRE—continued.

395; Species noted on visit of Yorkshire Naturalists' Union to Pateley Bridge, C. A. Cheetham, 310; Some Derbyshire Plant Galls, including Sheffield district records, J. M. Brown, 330-332; *Xiphura atrata* L. taken in Edlington Woods, C. A. Cheetham, 380; Species noted on visit of Yorkshire Naturalists' Union to Spurn, C. A. Cheetham 388; Plant galls noted in the Scarborough District, W. Falconer, 392; Additions to the List of Yorkshire Diptera, C. A. Cheetham, 394-395; Report of Meeting of Entomological Section of Yorkshire Naturalists' Union held at Leeds in October, B. Morley, 407-408

Fish.—Annual Report of Fish, etc., Committee of Yorkshire Naturalists' Union for 1918, J. F. Musham, 38; Fossils of the Holderness Basement Clays (Mollusca and Fishes), with descriptions of new species and illustrations, A. Bell, 57-59; Large Wharfe Trout and Chub, H. B. Booth, 150-151; Large Yorkshire Trout, W. J. Clarke, 245; Large Salmon and Barbel taken in the Ouse, noted, 341, 344; Large Roach caught in Hornsea Mere, noted, 343

Flowering Plants.—Annual Report of Botanical Section of Yorkshire Naturalists' Union for 1918, C. A. Cheetham and J. F. Robinson, 41; Annual Report of Botanical Survey Committee of Yorkshire Naturalists' Union for 1918, W. H. Burrell, 41; Note on Vegetative reproduction in Grasses, W. E. L. Wattam, 109; *Linum angustifolium* (Huds.) noted in Goosedale, Cloughton, H. E. Wroot, 136; Poem on Cheiranthus, F. A. Lees, 188; Species noted on visit of Yorkshire Naturalists' Union to Coxwold, W. E. L. Wattam, 208; The Nightmare of Names in the Bed of Roses, F. A. Lees, 211-213; Note on early record of *Cypripedium calceolus* in the herbarium of John Dalton, 282; Further note thereon, F. A. Lees, 341; Further note thereon, H. J. Wilkinson, 373; Occurrence thereof in Helk's Wood, Ingleborough, A. Bennett, 372; Further note thereon, F. A. Lees,

399; Species noted on visit of Yorkshire Naturalists' Union to Hawes, J. Hartshorn, 306-307; New vice-county records, and notes on rarer Yorkshire plants, A. Wilson, 369; Species noted on visit of Yorkshire Naturalists' Union to Spurn, C. A. Cheetham, 389; Report of meeting of Botanical Section held at Leeds in October, C. A. Cheetham, 389; The distribution of *Gentiana verna*, F. A. Lees, 380-391

Fungi.—Annual Report of Mycological Committee of Yorkshire Naturalists' Union for 1918, A. E. Peck, 42; In Memoriam Notice of Thomas Gibbs, with portrait, E. Snelgrove, 177-180; *Omphalia telmatiaea* collected in Rotherham district, J. H. Payne, 181; Species noted on visit of Yorkshire Naturalists' Union to Coxwold, F. A. Mason, 208-209; Species noted on visit of Yorkshire Naturalists' Union to Hawes, C. A. Mason, 307-308; Species noted on visit of Yorkshire Naturalists' Union to Pateley Bridge, M. Malone, 309-310; Some Derbyshire Plant Galls, including Sheffield district records, J. M. Brown, 330-332; New Lichen records for the county and vice-counties, A. Wilson, 369; Plant galls noted in the Scarborough District, W. Falconer, 393; Report of Fungus Foray held at Helmsley in October, with list of 70 additions for that district, A. E. Peck, 396-399; In Memoriam notice of Thomas Hey, A. E. Peck, 404-405

Geology and Palaeontology.—Annual Report of Geological Section of Yorkshire Naturalists' Union for 1918, John Holmes, 42; Report on Prof. P. F. Kendall's paper on 'Wash-outs in Coal Seams and the Effects of Contemporary Earthquakes,' read at meeting of Geological Society of London, 51-53; Report on Mr. C. T. Trechmann's paper 'On a Bed of Interglacial Löss and some Pre-glacial Fresh-water Clays of the Durham Coast,' read at meeting of Geological Society of London, with a Yorkshire Comparison, 54-55; Report on Drs. Wheelton Hind and A. Wilmore's

YORKSHIRE—continued.

- paper on 'The Carboniferous Succession of the Clitheroe Province, with Yorkshire references, read at meeting of Geological Society of London, 56; Fossils of the Holderness Basement Clays (Mollusca and Fishes), with description of new species, *Admete viridula shepardi* sp. nov. and *Astarte apiculata* sp. nov. and illustrations, A. Bell, 57-59; Note on Whitby Jet, 82; An Ancient 'Comb,' illustrated, 85; Notes on Underground Geology, with a reference to the Jurassic Rocks of Yorkshire, 119-120; Milk Tooth of *Elephas primigenius* found at Aldborough, C. F. Proctor, 183; Note on Yorkshire Shelly Drift, 222; Note on Dr. Gilligan's address to the Geological Society of London on the Petrography of the Millstone Grit of Yorkshire, 253; Fallen blocks of Lower Estuarine Sandstone, near Blea Wyke point, illustrated, F. G. Percival, 291-292; Bones of Bear from York, the reason thereof explained, illustrated, T. Sheppard, 293-294; Geological notes on visit of Yorkshire Naturalists' Union to Hawes, John Holmes, 304; Notes on the Iron-Ore of the Northern Counties, 317; Notes on the acquisition by the Hull Municipal Museum of the Drake and Bower Collections, 317-318; Carboniferous Nautiloid, *Cælonutilus trapezoidalis*, from the Pendleside Series, Pule Hill, Marsden, noted, 341; Geological notes on visit of Yorkshire Naturalists' Union to Spurn, J. W. Stather, 387
- Hemiptera.**—Notes on the species occurring in the Bubwith District (including Skipwith Common), and new county records, W. J. Fordham, 15-16, 70-71; Annual Report of Hemiptera, etc., Committee of Yorkshire Naturalists' Union for 1918, J. F. Musham, 40; Species noted on visit of Yorkshire Naturalists' Union to Coxwold, W. J. Fordham, 210; Melanism in *Phigalia pilosaria*, E. P. Butterfield, G. T. Porritt, 279, 339-340, 373-375; Plant galls noted in the Scarborough District, W. Falconer, 393
- Homoptera.**—Some Derbyshire Plant Galls, including Sheffield district records, J. M. Brown, 330-332.
- Hymenoptera.**—Notes on the species occurring in the Bubwith District (including Skipwith Common) and new county records, W. J. Fordham, 13-16, 70-71; Annual Report of Hymenoptera, etc., Committee of Yorkshire Naturalists' Union for 1918, J. F. Musham, 40; Correction as to first North of England record of *Polynema natans* (*Caraphractus cinctus* Holiday), C. A. Cheetham, 151; Note on Dr. H. Wager's paper on 'The colour-sense of wasps,' 156; *Leptothorax acervorum* taken at Rumbolds Moor, and curious female of same species taken at Keighley, 157; Aculeate Hymenoptera of a Doncaster Sand Pit, including several new county records, H. H. Corbett, 158-160; *Allantus perkinsi* (Morice) taken at Askham Bog, and larvæ of *Phadinocera micans* at same place, new county record, W. J. Fordham, 168; Species noted on visit of Yorkshire Naturalists' Union to Coxwold, including two new county records, W. J. Fordham, 210; Species noted on visit of Yorkshire Naturalists' Union to Ryhill, H. H. Corbett, 272; *Sirex gigas* at Sheffield, J. M. Brown, 292; Species noted on visit of Yorkshire Naturalists' Union to Pateley Bridge, R. Butterfield, 310; Some Derbyshire Plant Galls, including Sheffield district records, J. M. Brown, 330-332; *Lygaeonematus wesmaeli* (Tischb.), new British Sawfly, from Arncliffe estate, noted, 334; Report of meeting of Entomological Section of Yorkshire Naturalists' Union held at Leeds in October, B. Morley, 407-408
- Isopoda.**—Species noted on visit of Yorkshire Naturalists' Union to Hawes, W. Falconer, 305; Notes on *Armadillidium pulchellum* (Brandt) and other rare Yorkshire species taken in East and North Ridings, T. Stainforth, 361-362
- Lepidoptera.**—Notes on the Entomology of the Bubwith District (with Shipwith Common), including numerous new County records, W. J. Fordham, 13-16, 70-71; Annual

YORKSHIRE—continued.

Report of Lepidoptera Committee of Yorkshire Naturalists' Union, for 1918, B. Morley, 39; Micro-Lepidoptera captured in Wharfedale, W. Mansbridge, 135-136; Abnormal *Zygaena lonicerae* taken at Flamborough Head, and curious larva of *Euchelia jacobaeae* taken at Spurn, C. Couldwell, 182; Species noted on visit of Yorkshire Naturalists' Union to Ryhill, B. Morley, 272; Larvæ of *Cucullia verbasci* taken at Eldwick, E. P. Butterfield, 278; Re-occurrence of larvæ of *Cucullia verbasci* at Dalton, G. T. Porritt, 278; On the cause of melanism in *Phigalia pilosaria*, E. P. Butterfield, with footnote thereon by G. T. Porritt, 279, 339-340, 280; Species noted on visit of Yorkshire Naturalists' Union to Pateley Bridge, R. Butterfield, 310; *Plusia moneta* taken at Eldwick, and notes on other species, E. P. Butterfield, 337; *Chaerocamps nerii* (second county record) taken at Huddersfield, noted, 375; Species noted on visit of Yorkshire Naturalists' Union to Spurn, J. Porter, 388; Report of Meeting of Entomological Section of Yorkshire Naturalists' Union held at Leeds in October, B. Morley, 407-408

Lichens.—New county and vice-county records, A. Wilson, 369

Mammalia.—Annual Report of Mammals, etc., Committee of Yorkshire Naturalists' Union for 1918, J. F. Musham, 38; Records of stranded Cetacea on British Coasts, 1917, 50; Bones of Bear from York, the reason of their occurrence explained, illustrated, T. Sheppard, 293-294

Marine Biology.—Annual Report of Marine Biology Committee of Yorkshire Naturalists' Union for 1918, J. Irving, 38-39; Report of meeting of Marine Biology Committee of Yorkshire Naturalists' Union at Scarborough, A. I. Burnley, 363-364

Mollusca (Land and Fresh-water).—Annual Report of Conchological Section of Yorkshire Naturalists' Union for 1918, J. F. Musham, 39; *Limnaea truncatula* and *Physa fontinalis* in greenhouses at Selby

Park, J. F. Musham, 182; Species noted on visit of Yorkshire Naturalists' Union to Coxwold, G. Fysher, 208; Species noted on visit of Yorkshire Naturalists' Union to Ryhill, J. D. Firth, 272; Species noted on visit of Yorkshire Naturalists' Union to Hawes, G. Fysher, 305; Species noted on visit of Yorkshire Naturalists' Union to Spurn, G. Fysher, 388

Mollusca (Marine).—Fossils of the Holderness Basement Clays (Mollusca and Fishes), with description of new species, *Admete viridula sheppardi* sp. nov. and *Astarte apiculata* sp. nov. and illustrations, A. Bell, 57-59; Species noted on visit of Yorkshire Naturalists' Union to Spurn, G. Fysher, 388

Mosses and Hepatics.—Annual Report of Bryological Committee of Yorkshire Naturalists' Union, for 1918, W. Ingham, 42; In Memoriam Notice of Richard Barnes, with portrait, C. A. Cheetham, 44-45; *Cephalozia fluitans* (Nees) Spruce found near the Upper Tarn, Ilkley, W. H. Pearson, 106; Species noted on visit of Yorkshire Naturalists' Union to Coxwold, including new Yorkshire record, W. Ingham, 209-210; Species noted on visit of Yorkshire Naturalists' Union to Ryhill, J. W. H. Johnson, 273; Species noted on visit of Yorkshire Naturalists' Union to Hawes, C. A. Cheetham and F. E. Milsom, 307; Species noted on visit of Yorkshire Naturalists' Union to Pateley Bridge, W. H. Burrell, 309; Species noted on visit of Yorkshire Naturalists' Union to Spurn, C. A. Cheetham, 389

Museums.—Halifax, Bankfield Museum, Notes of, No. XI., 85; Hull Museums, Publications of, (Nos. 113, 114, 115, 116), 181; Acquisition of Hull Old Grammar School, 224

Myriopoda.—Notes on new Yorkshire species, 155

Neuroptera, etc.—Notes on the species occurring in the Bubwith District (including Skipwith Common), W. J. Fordham, 14; 70-71, Annual Report of Neuroptera, etc.,

YORKSHIRE—*continued.*

Committee of Yorkshire Naturalists' Union for 1918, G. T. Porritt, 40 ; Species noted on visit of Yorkshire Naturalists' Union to Hawes, C. A. Cheetham, 305 ; Species noted on visit of Yorkshire Naturalists' Union to Pateley Bridge, R. Butterfield, 310 ; *Sympetrum sanguineum* Mull., captured at Hawkesworth, an addition to the County List, J. W. Carter, 399,

Personal Notices.—In Memoriam Notice of Richard Barnes, with portrait, C. A. Cheetham, 44-45 ; In Memoriam notice of George Parkin, with portrait, E. G. Bayford, 75-76 ; In Memoriam notice of H. C. Drake, F.G.S., with portrait, T. Sheppard, 107-109 ; In Memoriam notice of W. Denison Roebuck, M.B.C., F.L.S., with portrait, J. W. Taylor, 143-149 ; In Memoriam notice of Thomas Gibbs, with portrait, E. — Snelgrove, 177-180 ; In Memoriam notice of Edward Lamplough, with portrait, T. Sheppard, 181 ; In Memoriam notice of Prof. F. W. Moorman, 338 ; In Memoriam notice of *Aquila* Dodgson, 343 ; In Memoriam notice of John Hopkinson, F.L.S., 344 ; In Memoriam notice of Sir W. H. St. John Hope, LITT.D., D.C.L., 344 ; In Memoriam notice of Samuel Jefferson, 385 ; In Memoriam notice of Alfred White, 395 ; In Memoriam notice of Thomas Boynton, F.S.A., T. Sheppard, 404 ; In Memoriam notice of Thomas Hey, A. E. Peck, 404-405

Protura.—The Apterygota of Yorkshire and Derbyshire, with figure of *Megalothorax minimus*, J. M. Brown, 63-66

Reptiles.—Annual Report of Reptiles etc., Committee of Yorkshire Naturalists' Union for 1918, J. F. Musham, 38

Scientific History.—Annual Report of Yorkshire Naturalists' Union for 1918, T. W. Woodhead, W. E. L. Wattam, and E. Hawkesworth, 33-43 ; Yorkshire Type Ammonites, Part XVII., S. S. Buckman, 59 ; 'Nature and Man,' being the Presidential Address to the Yorkshire Naturalists' Union at Leeds, December, 1918, 89-96, 123-134 ; Further

notes on Old Scientific Magazines, additions to 'Yorkshire's Contribution to Science,' T. Sheppard, 161-163, 220 ; 'Kingston-upon-Hull : before, during and after the Great War,' being the peace souvenir presented to the School children of Hull, T. Sheppard, 314 ; The Bradford Antiquary, Part XX., 315

Societies.—Bootham School, York, Natural History, etc., Society, Annual Report of, 81, 364 ; East Riding Antiquarian Society, Transactions of, Vol. XXII., 380 ; Hull Geological Society, Report of Annual Meeting, 205 ; Hull Scientific and Field Naturalists' Club, Report of Annual Meeting of, 376 ; Transactions of, Vol. IV., 379 ; Leeds Astronomical Society, Transactions of, No. 25, 80, 364 ; Sedbergian Sedgwick Society, Transactions of, 378 ; Selby Scientific Society, Annual Report of, 84 ; Yorkshire Geological Society, Transactions of, Part IV. of Vol. XIX., 2 ; Yorkshire Natural Science Association, Notes upon, 2-4

Thysanura.—The Apterygota of Yorkshire and Derbyshire, with figure of *Megalothorax minimus*, J. M. Brown, 63-66

Tunicata.—New county records made during meeting of Marine Biology Committee of Yorkshire Naturalists' Union at Scarborough, A. I. Burnley, 363

Yorkshire Naturalists Union.—Report of Annual Meeting held at Leeds, December, 1918, W. E. L. Wattam, 26-28 ; Annual Report of the Union for 1918, T. W. Woodward, W. E. L. Wattam and E. Hawkesworth, 33-43 ; 'Nature and Man,' being the Presidential Address to the Yorkshire Naturalists' Union, at Leeds, December, 1918, 89-96, 123-134 ; Protection of Plover and Eggs in West Riding, 121 ; Visit of Yorkshire Naturalists' Union to Coxwold, W. E. L. Wattam, 206-210 ; Visit of Yorkshire Naturalists' Union to Ryhill, near Wakefield, W. E. L. Wattam, 271-273 ; Knighthood for Past-President, Prof. Wm. Boyd Daw-

YORKSHIRE—*continued.*

kins, 283; Visit of Yorkshire Naturalists' Union to Hawes, W. E. L. Wattam, 303-308; Visit of Yorkshire Naturalists' Union to Pateley Bridge, W. E. L. Wattam, 308-310; Report of meeting of Marine Biology Committee at Scarborough, A. I. Burnley, 363-364; Election of Prof. J. E. Marr, SC.D., F.R.S., as President of the

Union for 1920; Visit of Yorkshire Naturalists to Spurn, T. Sheppard, 386-389; Report of meeting of Botanical Section, C. A. Cheetham, 389; Report of Fungus Foray held at Helmsley in October, A. E. Peck, 396-399; Report of meeting of Entomological Section held at Leeds in October, B. Morley, 407-408

MISCELLANA.

Acari.—Galls of species noted in upper part of Ceiriog Valley, South Denbighshire, A. A. Dallman, 165-166

Arachnida.—New and rare British Spiders, figured and described, W. Falconer, 295-302; Additions to the List of Spiders of Wicken Fen, W. Falconer, 356

Birds.—Cuckoo's Eggs and Foster parents, E. P. Butterfield, 110; Former Status of the Starling, E. P. Butterfield, 110-111, 215; Further notes thereon, F. C. R. Jourdain, 183; W. Gyngell, 215; Late Stay of Swifts, E. P. Butterfield, 111; Notes on Contents of a Wood Pigeon's Crop, with illustration, 121-122; Ornithological Observations and reflections in Shetland, E. Selous, 167-168; 259-262, 357-362, 381-385; Note on the last of the Sea-Eagles, 190; Food of Wild Birds, with diagrammatic representations, 192-194; Harmful and useful Birds, A. E. Hall, 246; Nightingales in Shropshire, H. E. Forrest, 277-278; Note on presentation of Selous collection of European Birds' eggs to Natural History Museum, London, 281; Sounds that resemble the songs and calls of Birds, W. Gyngell, 311-312; Note thereon, M. L. Sykes, 373; Herons and Pike, E. A. W. Peacock; Footnote by R. Fortune, 340-341; Further note thereon, E. A. W. Peacock, 405-406; Starling Note, F. D. Welch, 341; Little Owl nesting at Bridgnorth, Shropshire, Frances Pitt, 370

Botany.—The Nightmare of names in the Bed of Roses, F. A. Lees, 211-213; Do leaves want watering?

E. A. Woodruffe-Peacock, 246; Note on experiments in preserving plants in Formalin, 285-286; The Distribution of *Gentiana verna*, F. A. Lees, 390-391

Correspondence.—47-48, 110-111, 183, 215, 246, 279-280, 311, 312, 339-341, 373-375

Fishes.—The Hearing Organs of Fishes, with illustrations, J. Smith, 60-62, 169-173

Diptera.—Galls of species noted in upper part of Ceiriog Valley, South Denbighshire, A. A. Dallman, 164-165

Fungi.—The Jew's Ear Fungus (*Hirneola auricula-judæ* Fr.), its life history and distribution, with illustrations, W. Johnson, 225-230, 255-258, 287-290, 319-322

Geology and Palaeontology.—Report on Prof. P. F. Kendall's paper on 'Wash-outs in Coal Seams and the Effects of Contemporary Earthquakes,' read at Meeting of Geological Society of London, 51-53; Report on Dr. A. Gilligan's paper 'On Sandstone Dykes or Rock-Riders in the Cumberland Coalfield,' read at Meeting of Geological Society of London, 53-54; Report on C. T. Trechmann's paper 'On a Bed of Interglacial Löss and some Pre-glacial Fresh-water Clays of the Durham Coast,' read at Meeting of Geological Society of London, with a Yorkshire Comparison, 54-55; Report on Drs. Wheelton Hind and A. Wilmore's paper on 'The Carboniferous Succession of the Clitheroe Province,' read at a Meeting of the Geological Society of London, 56; Note on Britain's

MISCELLANA—continued.

- Mineral Resources, 81; Whitby Jet, 82; Origin of Flint, 86; Ammonite or Mammoth? with illustrations, 116-118; Notes on Underground Geology, 119-120; Notes on Mr. Sydney Brook's paper on 'Some Problems of Coal,' 153-154; Notes on Ice Transport, Yorkshire Shelly Drift, and Anchor Ice, 222-224; Notes on Fossil Skulls, 283-284; Note on British Oil-pools, 284; Notes on Dr. J. W. Evan's Address to the Geological Section of the British Association, 349-352
- Homoptera.**—Galls of species noted in upper part of Ceiriog Valley, South Denbighshire, A. A. Dallman, 165
- Hymenoptera.**—Note on Dr. H. Wager's paper on 'The colour-sense of Wasps,' 156; Myrmecophilous Notes, 157; Galls of species noted in the upper part of Ceiriog Valley, South Denbighshire, A. A. Dallman, 164
- Lepidoptera.**—The Causes of Varieties in Butterflies, F. D. Welch, with footnote by G. T. Porritt, 47-48; Notes on the distribution of the Marsh Ringlet, 221; Melanism in *Phigalia pilosaria*, E. P. Butterfield, G. T. Porritt, 279, 339-340, 373-375
- Magazine Notes.**—45, 48, 62, 74, 80, 112, 152, 173, 183, 184, 216, 245, 273, 312, 332, 337, 344, 352, 362, 375, 406
- Mammalia.**—Note on lumbar vertebra of Sibbald's Rorqual (*Balaenoptera sibbaldii*) found at Barmouth, H. E. Forrest, 104; Undocked Dogs the quicker, E. A. Woodruffe-Peacock, 246; Note on presentation of Selous collection of big game trophies to Natural History Museum, London, 281; Undocked Dogs, J. H. Payne, 311
- Mollusca** (Land and Freshwater).—Note on Linnean Species of Mollusca 1-2; The Common Banded Snail: a study in variation, A. E. Trueman, 5-9, 67-69; Notes on Arctic-Alpine Mollusca, with illustrations, Hans Schlesch, 29-32; *Helix* (*Macularia*) *vermiculata* Müller, found in Northamptonshire, J. W. Taylor, 122
- Mollusca.**—Copy of autograph letter of Thomas Martyn in his book of 'Figures of Non-descript Shells,' published, 1764, A. E. Hall, 279
- Mosses and Hepatics.**—List of species found at Colwyn, Denbighshire, W. H. Pearson, 136
- Museums.**—Museums Associations, Notes on Annual Conference held at Oxford, 249-252
- Northern News.**—25, 48, 59, 74, 80, 112, 140, 205, 213, 238, 247-248, 262, 266, 270, 276, 280, 286, 312, 328, 338, 341, 343, 344, 360-368, 376, 385, 395, 408
- Personal Notices.**—In Memoriam Notice of William Ernest Sharp, F.E.S., W. J. Fordham, 274-275; In Memoriam Notice of Henry Augustus Paynter, with portrait, H. B. Booth, 275-276
- Poetry.**—Chaffinch, The Song of the, Prof. W. Garstang, 195; Cheiranthus II., 1919, F. A. Lees, 188; Field-fares, Prof. F. W. Moorman, 192; Garden-Warbler, The Jewel song of, Prof. W. Garstang, 233; Greenfinch, The Song of the, Prof. W. Garstang, 196; Hedge Sparrow, The Song of the, Prof. W. Garstang, 197; Redstart, The ode of the, Prof. W. Garstang, 231; Sunset and Soul-Shine, Prof. W. Garstang, 281; Tree-Pipit, The Wing-Song of the, Prof. W. Garstang, 198; The Gardener and the Robin, Prof. F. W. Moorman, 191; White-throat, The dancing song of, Prof. W. Garstang, 232; Willow-Warblers, The Chorus of the, Prof. W. Garstang, 197; Wren, The Song of the, Prof. W. Garstang, 196
- Scientific History.**—Further notes on Old Scientific Magazines, additions to 'Yorkshire's Contribution to Science,' T. Sheppard, 161-163; The Witchery of Gilbert White, E. A. Woodruffe-Peacock, 199-205
- Societies.**—Notes on Bournemouth Meeting of the British Association, 338
- Zoocecidia.**—List of and Notes upon species taken in the upper part of Ceiriog Valley, South Denbighshire, A. A. Dallman, 164-166

CORRIGENDA.

Page 61, line 3, for 'explerimentum,' read 'experimentum.'

PLATE.

Plate.

To face page

I.—Juvenile Snow Bunting	
Sky-Lark	
Wood-Lark	
Richard's Pipit (First Winter)	
Juvenile Rock Pipit	120

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